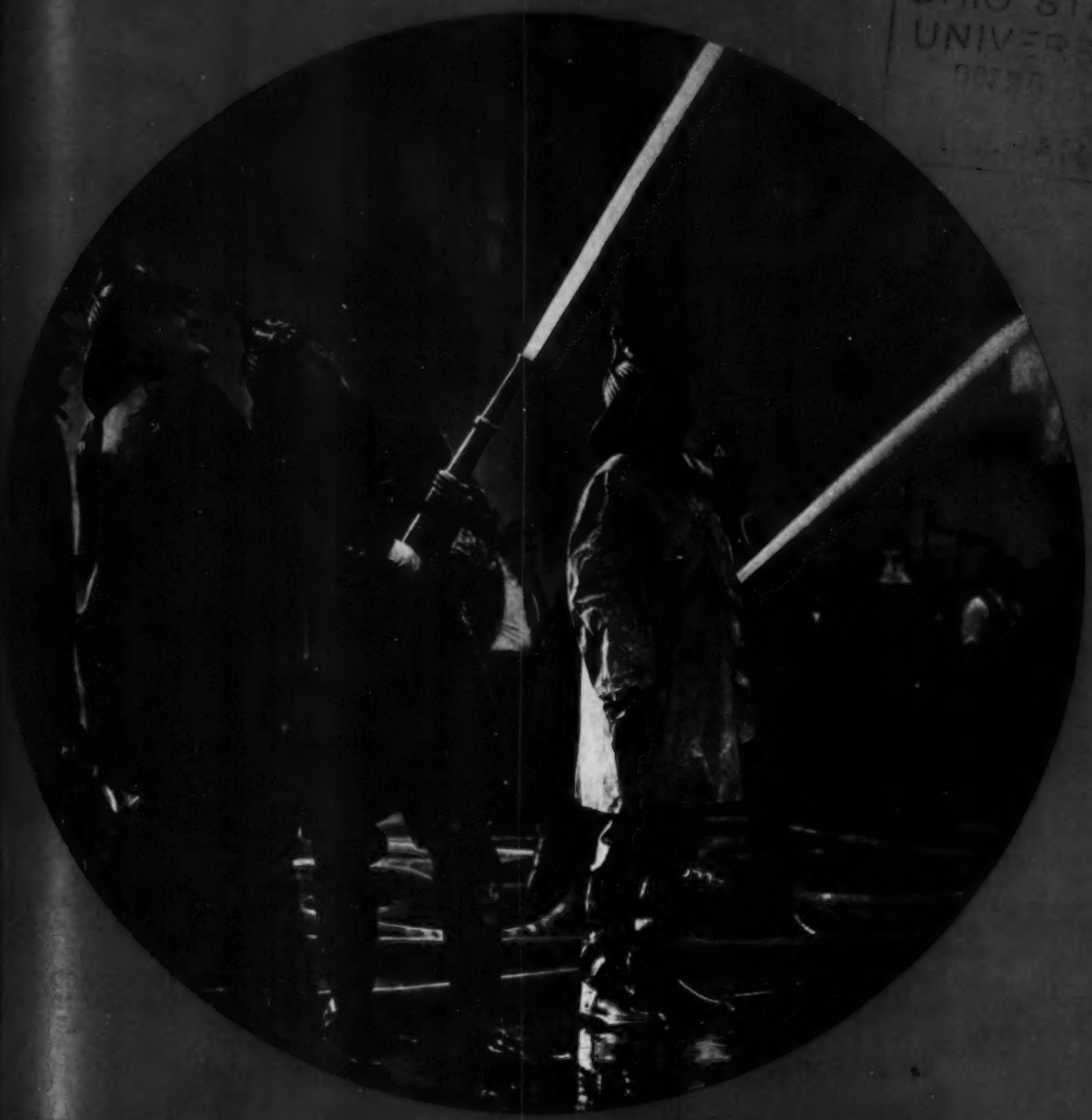
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

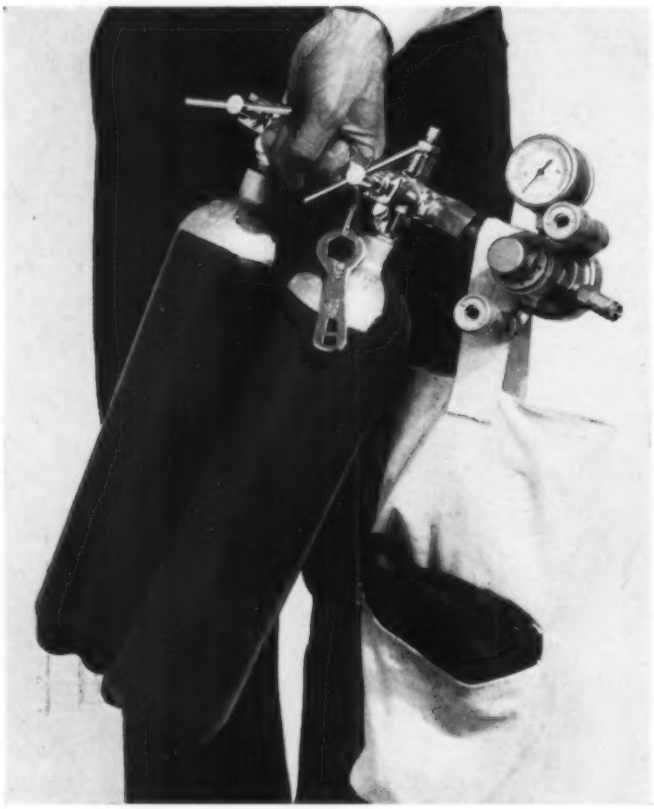
OCTOBER, 1948

OHIO STAT
UNIVERSIT



A CASE - SHEPPERD - MANN PUBLICATION

PORTABLE??



This Utility Model Emerson Resuscitator weighs *just 28 pounds* as shown

and gives a patient 1 hour and 25 minutes of resuscitation. Originally designed for Army and Navy requirements, it is now redesigned for emergency and medical use, and is offered SINGLE, DUAL, TRIPLE or QUADRUPLE.

By having a separate aspirator for each patient, along with the standard, full-sized Emerson mechanism, you can treat each case independently, even at the end of a 50 or 100-foot extension hose. A quadruple set-up (as used 3 years by a famous West Coast disaster unit) employs a large cylinder fitted with a manifold. You could have a manifold for up to 10 patients. But we recommend dual units—for mobility, distribution, and avoidance of confusion.

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STANDARD EMERSON PORTABLE

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Extra VISIBILITY... from Every Angle

Beacon Ray beams rotate through full 360°

Extra STRENGTH...

Beacon Ray emits *two* powerful signal beams (180° apart)

Extra PROTECTION... for Parked Vehicles

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING, THE FIRE ENGINEER, FIRE PROTECTION *and* FIRE SERVICE

VOL. 101 OCTOBER, 1948 No. 10

	Page
With the Editor By Fred Shepperd	673
What the Fire Service Should Know About the Atomic Bomb	674
25% of Present Apparatus Needs Immediate Replacement	679
Evaluating Industrial Plant Fire Hazards By Walter W. Stephen	681
Television — Blessing or Bane to the Fire Service A FIRE ENGINEERING Special Report	684
Wet Water Credited with Quick Dwelling Fire Stop A Special Report	688
Do Fire Service Communications Measure Up to Modern Needs? By Roi B. Woolley	691
Are Self-Service Gas Stations a Dangerous Innovation? By George E. Courser	698
Columbus Plans Return to Fifty-Six Hours Per Week By Walter G. Strickfaden	699
Novel Fire Show Repeated at Illinois State Fair	700
News of the Manufacturers	707
Short Cuts and Gadgets	708
Portrait Section	709
False Alarms	716
The Watch Desk By Roi B. Woolley	722
The Round Table What Controls for Use of Painters' Torches?	726
Questions and Answers	732
Worldwide Fire News By Roi B. Woolley	736
What's Burning?	739
Persons in the News	751
Convention Dates	755
Book Shelf	757

FIRE ENGINEERING

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Editor

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Assistant Editor

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NOW A PRODUCT OF NATIONAL FOAM SYSTEM

75 YEARS OF SERVICE

YOUR GUARANTEE OF QUALITY

The fire truck shown at the right is equipped with our Barton-American, Gear Driven, Front Mounted Centrifugal Fire Pump, that can be mounted on any commercial chassis. Available in sizes to 600 GPM at conventional pressures and for high pressure fog gun service—giving you dual protection—fog as well as Underwriters Approved streams.

The fire truck shown at the left is equipped with our Barton-American, Duplex Multi-Stage, Centrifugal, Midship Mounted Fire Pump, which can also be mounted on any commercial chassis. It is the **only two-stage fire pump with three distinct operating characteristics. No other pump has this feature.**

A REAL MARK OF DISTINCTION

75th ANNIVERSARY

Back in 1873 this company started manufacturing pumps—we have never stopped. Today our Barton-American fire pumps are operating throughout the entire world. These 75 years of continued service and experience are your guarantee of quality.

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PUMPS, INCORPORATED
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IN CANADA: C. E. HICKEY & SONS, LTD., HAMILTON, ONT.

When a hose blows—look out!

WHEN fire hose bursts, time lost in making replacement is time gained by the fire. Often lives are lost, property destroyed, all because a hose failed. New B. F. Goodrich fite hose resists bursting with the strongest construction of any fire hose on the market. Here are two good reasons why.

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Stronger jacket—To make the jacket stronger, weavers use *more* cords, but of smaller gauge. This increases strength without adding weight or bulk. Cords are pre-stretched and woven under uniform tension to eliminate weak spots. Woven jacket is treated by B. F. Goodrich Hydroseal process to resist rotting, mildewing, waterlogging, and freezing.

Coupling and gaskets—B. F. Goodrich fire hose is available with all standard couplings, including cast brass, drop forged brass pin or rocker lug. Koroseal swivel gaskets stop leaky connections—provide a positive seal at the hydrant outlet.

Before your old hose blows, see this new fire hose that's stronger, and stays that way longer. Ask your local distributor to show it to you, or write: *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

Koroseal—Trade Mark Reg. U. S. Pat. Off.

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NOW SCIENCE ARMS THE FIRE SERVICE WITH A NEW AND POWERFUL WEAPON!

THE SPANGLER "DUAL" — Revolutionary Design — and, a standard list price!

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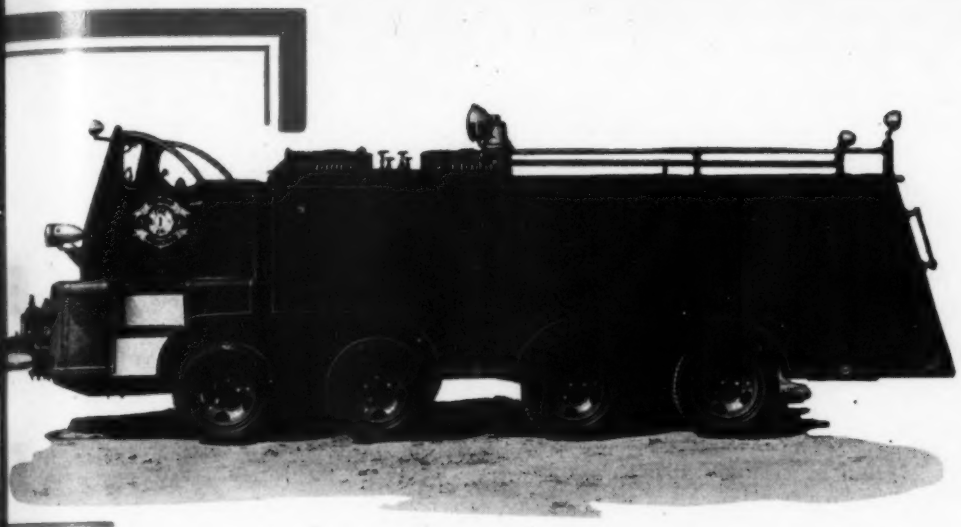
More than double the normal hose-carrying capacity-room for 5000-ft. of 2½ in. hose, or its equivalent.

Dual maintenance—Service and parts available through any recognized Ford Agency.



THE SPANGLER "DUAL" FIRE FIGHTING UNIT

NOW!—Science arms the fire service with a new, powerful weapon—dual powered for double effectiveness.

The SPANGLER "DUAL" unit brings the full force of water in quantity plus power to deliver it in quantity on the *fire*—in the shortest possible time!

Every fire fighter knows (1) water is still the universal extinguishing agent, and (2) the first few minutes of any fire determine its extent and severity.

Every fire fighter knows that more fires are lost at the outset because sufficient water cannot be brought to bear on their early and critical stages. This is true in the city as well as the country!

Every fire fighter knows that if he could get 500 gallons to play on a fire in its early stages, he can extinguish *more* fires than if he can only get 150 gallons. He knows that other things being equal, the *more water* he can get to work *on a blaze*—without having to "pause for refreshment" (refilling the booster, or setting up relays, etc.)—*the more fires he's going to knock down!*

THE SPANGLER "DUAL" unit answers that need—brings a reservoir of 1500 gallons of water—enough for over 20 minutes of effective fire fighting and power to apply it!—together with all equipment and crew right to the scene. Hose sufficient for long stretches. Dual pumps capable of delivering 1,000 GPM when called on. Propulsion power to speed this mighty unit over country lanes, highways and byways or city streets.

Until you have this entire story you cannot conceive of the fire control power of this new unit. You owe it to yourself, and your community to get all these facts. Write for the full story of the SPANGLER "DUAL"—it's free.

Manufactured by

HAHN MOTORS, INC.

HAMBURG, PA.

for

D. H. SPANGLER ENGINEERING & SALES CO.

HAMBURG **PENNSYLVANIA**

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glass curtains

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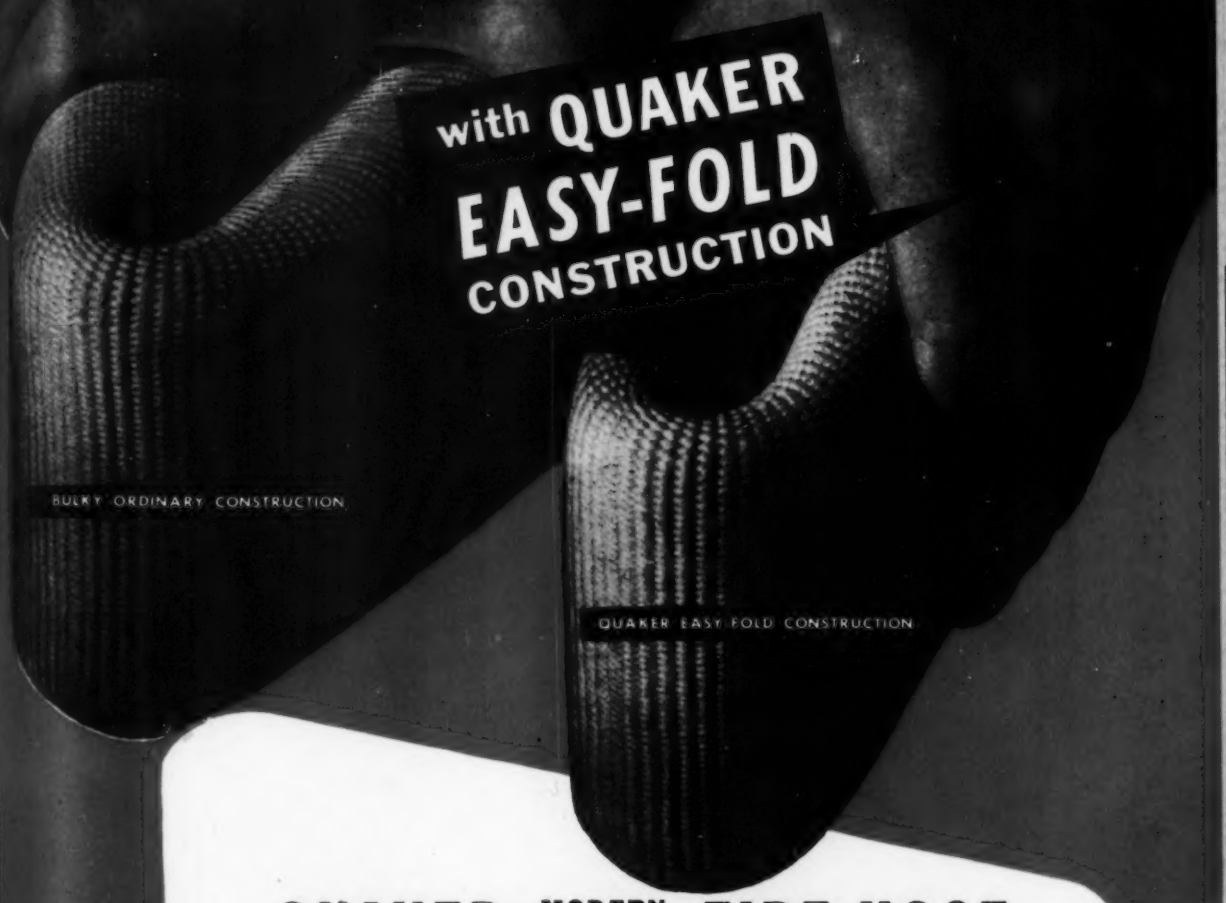


QUAKER MODERN MUNICIPAL FIRE HOSE

folds flatly . . . allows 33% more footage in trucks

When minutes mean lives and extra footage saves the high, hard-to-get-at places that's when Quaker Hose proves its value.

With Quaker Modern Municipal Fire Hose you can pack ⅓ more footage in your trucks. The Quaker easy-fold construction provides greater flexibility, flatter folding and more compact storage without sacrificing ruggedness or long service. Strong "pressure proof" jackets resist constant abrasion and severe use. Resilient rubber tube defies drying-out, is non-acid forming, remains flexible for easy folding and handling.

That's why Quaker is the choice of the leaders throughout the nation. Prove to yourself the value of this dependable fire hose. Stop in at our Booth at the conference. . . .

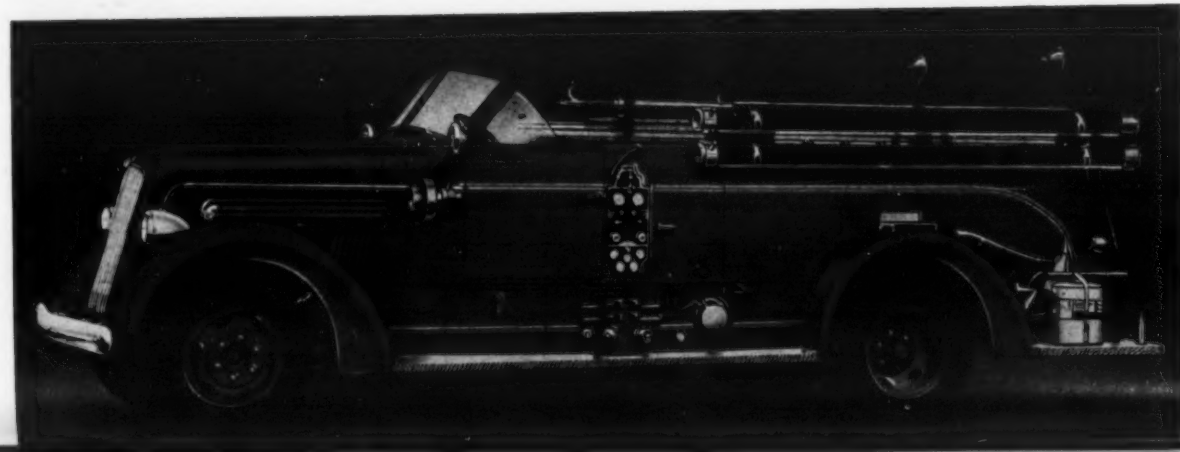
BOOTH No. 31 INTERNATIONAL ASSOCIATION OF FIRE CHIEFS
November 9th to 12th

QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory
QUAKER PACIFIC RUBBER CO. - San Francisco 10 - Los Angeles 21 - Seattle 4

Seagrave

THE GREATEST NAME IN FIRE APPARATUS



THE SEAGRAVE CANOPY CAB PUMPER, pictured above, is of safety steel construction and provides an abundance of room for crew, hose and equipment. . . . The Canopy Cab and Open Type Models both have full vision windshields, simplified brakes, dash instrument panels at eye level, throttle and parallel series control of push pull type. . . . Powered with Seagrave V-12 motors. Capacities 750 to 1250 gallons.

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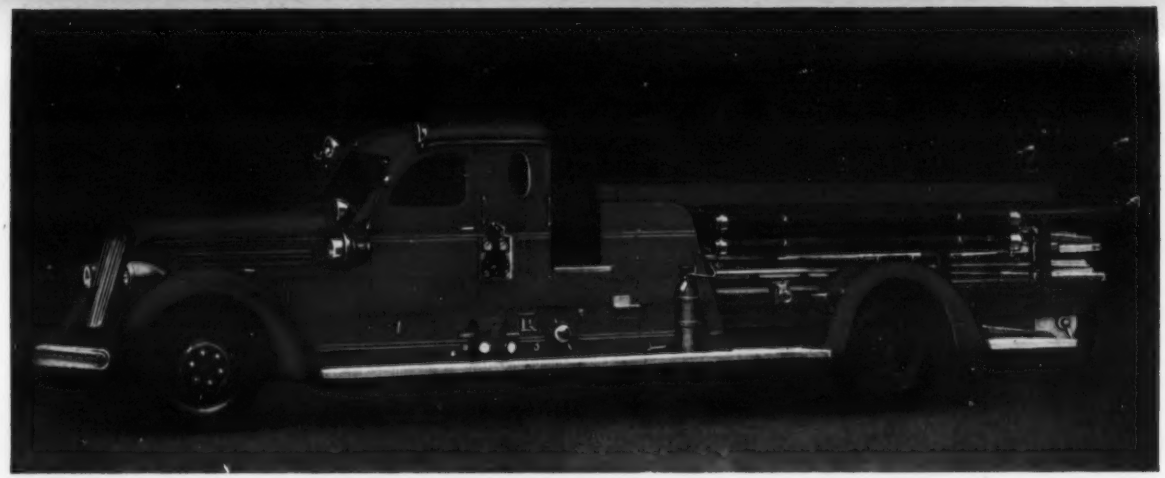
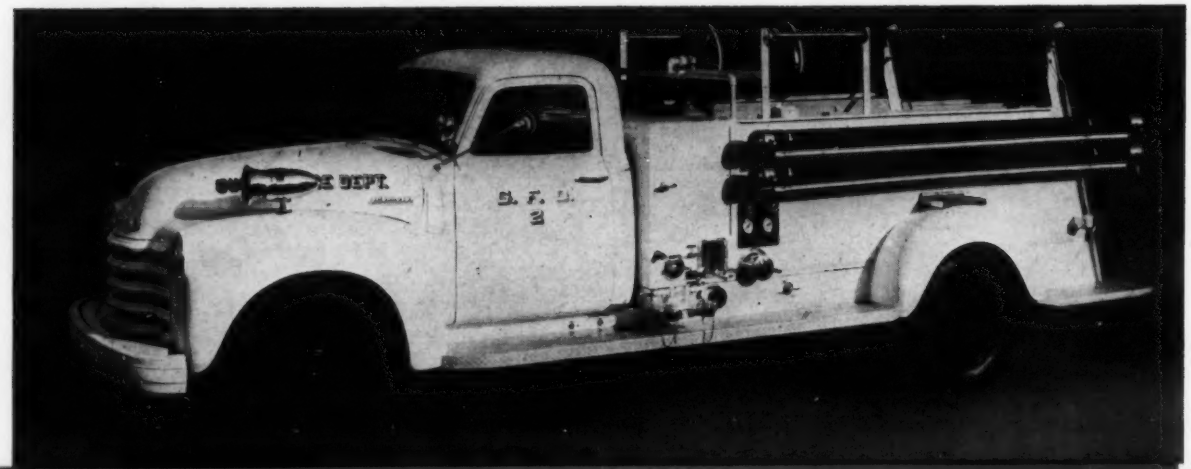
push pull type. . . . Powered with Seagrave V-12 motors. Capacities 750 to 1250 gallons.



SEAGRAVE QUAD—a combination service ladder truck and pumping engine. Powered with Seagrave V-12 motor and like all Seagrave Apparatus it has double ignition system, double fuel pumps and double fan belts. . . . The pump is two stage parallel series type Seagrave Centrifugal and delivers from 500 to 1000 gallons per minute at 150 pounds pump pressure. The Quad comes equipped with all standard ladders and accessories.



SEAGRAVE COMMERCIAL PUMPER—Made especially for those discriminating small municipalities that desire top quality fire protection at a price they can afford to pay. The body, pump and all equipment are of regular Seagrave construction. . . The pump is an all bronze Seagrave Centrifugal with a capacity of 500 gallons per minute. The apparatus illustrated is mounted on Chevrolet chassis. . . . Also available on Ford or International chassis.

THE SEAGRAVE CORPORATION Columbus, Ohio

BICKLE-SEAGRAVE LTD., WOODSTOCK, ONT.

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1869

1948

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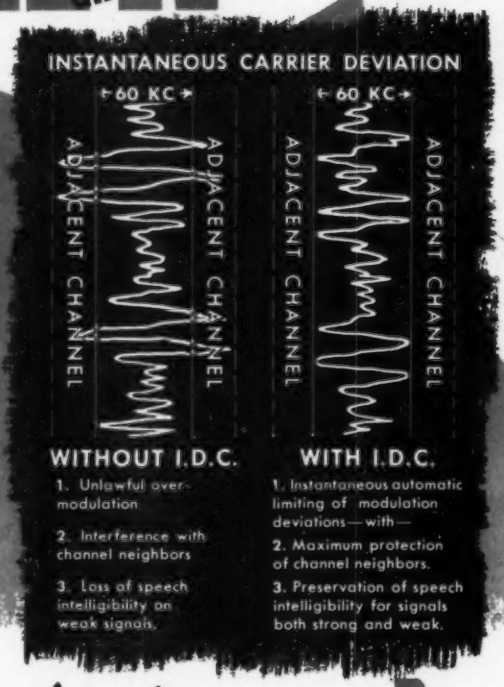
I.D.C.



WITHOUT I.D.C.

1. Unlawful over-modulation
2. Interference with channel neighbors
3. Loss of speech intelligibility on weak signals.

WITH I.D.C.

1. Instantaneous automatic limiting of modulation deviations—with—
2. Maximum protection of channel neighbors.
3. Preservation of speech intelligibility for signals both strong and weak.

For the first time the deviation will be coordinated with the receiver bandpass to insure the greatest possible speech intelligibility on weak received signals.

Instantaneous Deviation Control

FM modulation control problems can *not* be solved by *Speech clippers, compressors* or *a.v.c. circuits* only. I.D.C. provides the fundamental scientific solution by controlling the steepness of the modulating wave front. Only by means of this instantaneous slope limiting action can *unlawful* excessive deviation be prevented.

I.D.C. improves system operation and answers the F.C.C. proposed regulations for channel-neighbor protection.

Motorola Inc.

COMMUNICATIONS DIVISION. CHICAGO 51. ILL.

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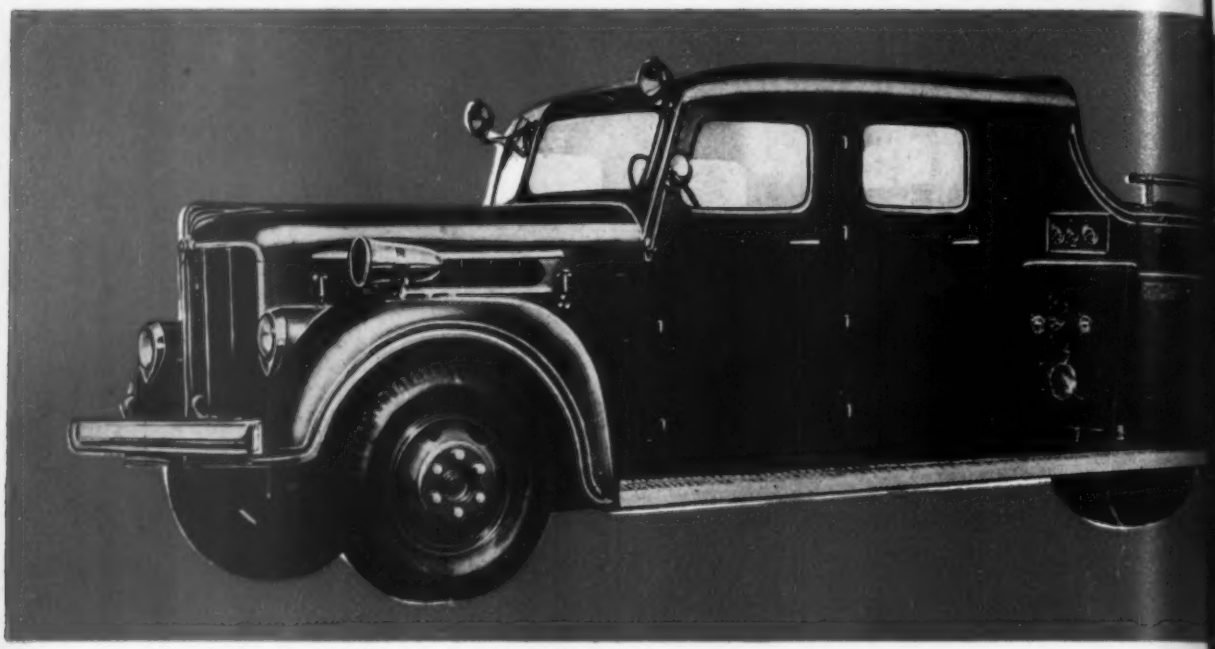
WRITE TODAY

Your Motorola Communications Engineer will call to discuss the use of the new Motorola I.D.C. in your communications system. No obligation, of course.

Motorola FM 2-WAY RADIO



MAXIM

BUILDS A COMPLETE LINE OF

Apparatus you can depend on!

Maxim Motor Fire Apparatus — a complete line — is now available from coast to coast. More Maxim apparatus is being sold today than ever before. Yet, every piece of Maxim apparatus in our lines today is designed and built with the same sincere and skilful workmanship that characterizes all of the many Maxim trucks that are rolling up such splendid performance records year after year.

Buy — and standardize — on Maxim — apparatus with a reputation for dependability.

MAXIM MOTOR CO. MIDDLEBORO, MASS.

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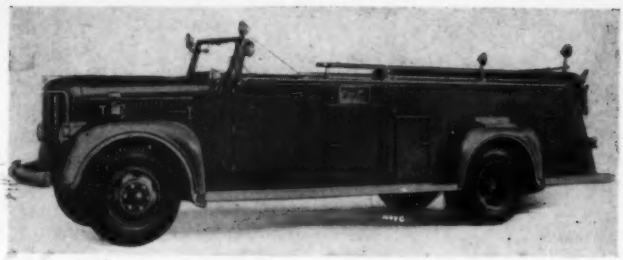
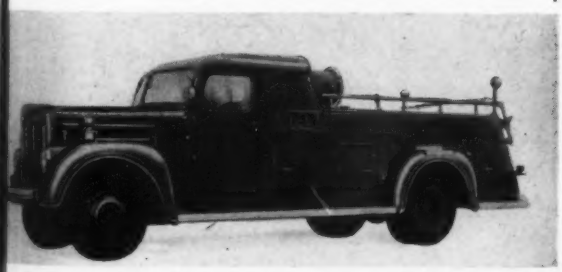
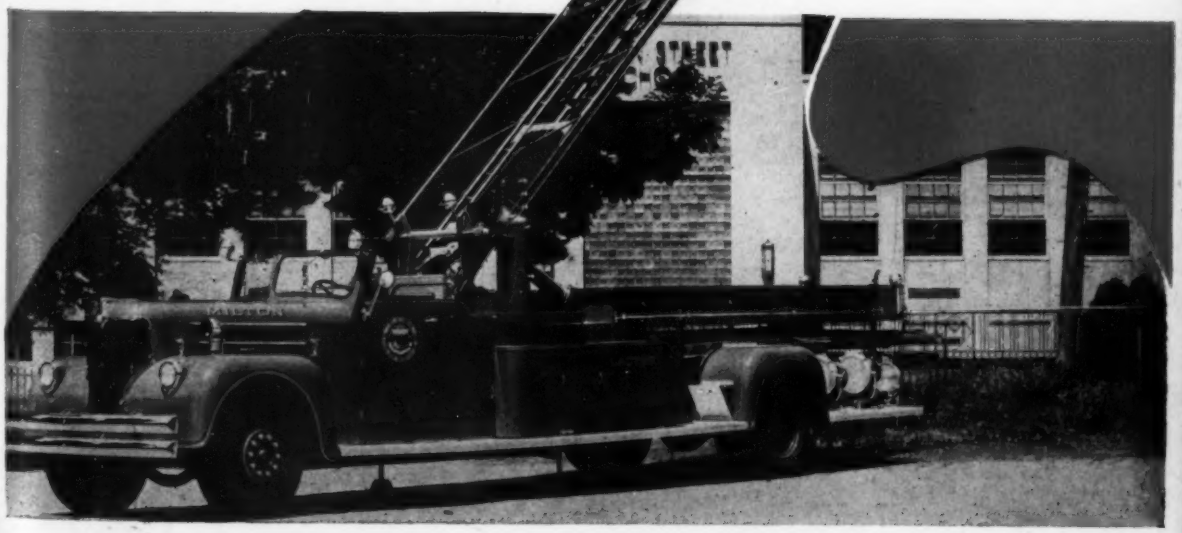
We manufacture a complete line of "complete apparatus" from start to finish: City Service Ladder Trucks, Quadruple Trucks, Hose Wagons, Rescue and Squad Cars, 1,250 - 1,000 - 750 and 500 gallon Pumpers — and, the best of all, an all-steel aerial with complete hydraulic control. High-pressure centrifugal pumps up to 600 lbs. pressure. Write for data.





The World's Finest Aerial



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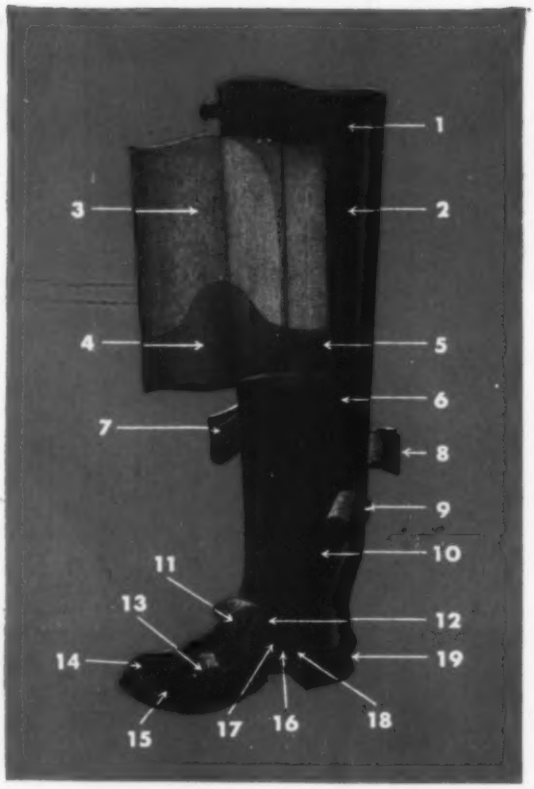
SIREN

Since 1926 the registered name TOP NOTCH SIREN has stood for quality of product, and has guaranteed boot satisfaction to firemen all over the country

1. Storm King length is 3" higher than the usual, giving more protection —quick adjustment.
2. Outside, extra rubber reinforcement.
3. Net lining for ample stretch throughout the entire skirt.
4. Thick gauge inside gum knee patch of crepe rubber — prevents sharp cracking.
5. Sturdy pull-on loops, on both sides.
6. Warm wool lining throughout.
7. Special stiffening collar to make it easy to get into the boot.
8. Six plies of fabric and rubber here.
9. Seven plies of fabric and rubber here—a "shingled" construction which distributes the strain, resists snagging and gives much longer wear.



10. This entire boot is vulcanized by ammonia cure —a patented, exclusive feature.
11. Fourteen plies of fabric and rubber with special throat stay.
12. Made over a special last, fuller through the ankle and instep.
13. Nine plies of fabric and rubber at the vamp.
14. Reinforcing toe cap protection.
15. Extra thick super-quality soles.
16. Reinforced ladder shank, carefully shaped to fit the fireman's foot.
17. Warm felt lining, insole and leg.
18. Thick side guards at shank, giving protection against nail or splinter puncturing.
19. Full size heel.

22 YEARS OF
FOOT COMFORT • SAFETY • WEAR

Sold Only Through Authorized Distributors

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BEACON FALLS RUBBER FOOTWEAR

BEACON FALLS, CONNECTICUT

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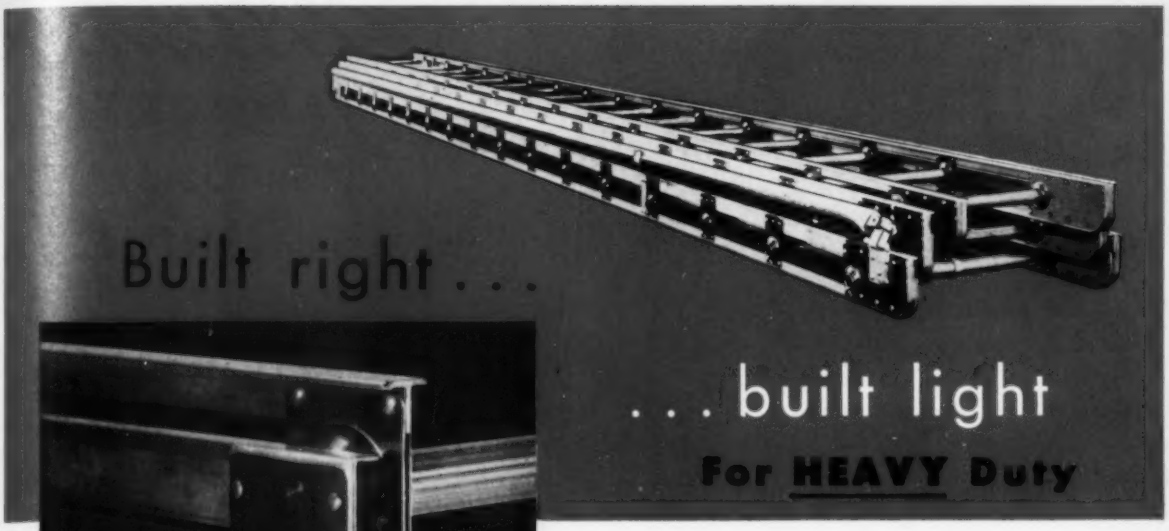
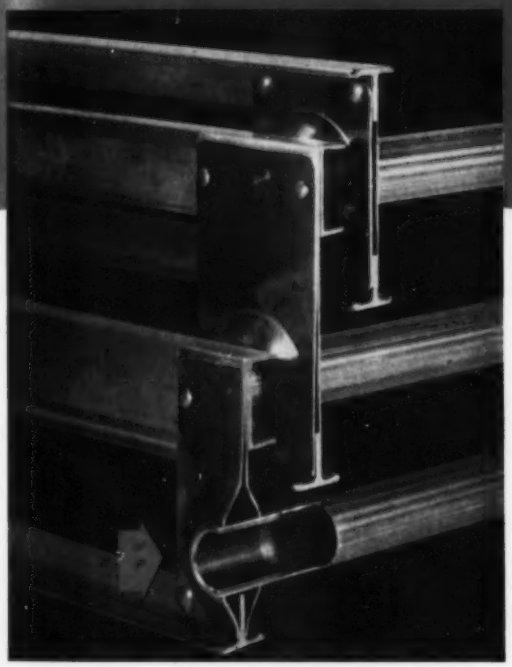




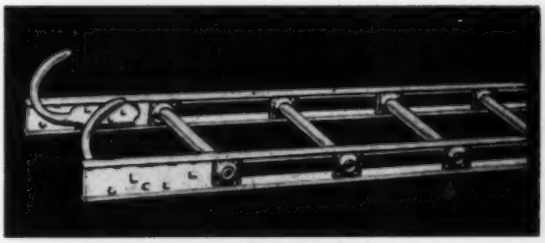
This *unretouched* cross-section photo of the popular Type 3 EL Heavy Duty Extension Ladder shows how sound engineering principles can make the most of aluminum's twin characteristics, *strength* and *lightness*. Stringers are made of rigid aluminum alloy channels and T-sections, braced at the rungs by double heavy riveted plates. The corrugated rungs are secured in flanged seats by means of aluminum expansion bushings. (See split-section view at red arrow.) This exclusive feature prevents for all time loosening or breakage of the rungs.

Besides the three-section ladder shown here, *original* Heavy Duty Extension Ladders come in two and four sections. A wide range of sizes assures you of getting *exactly* the right ladder to suit your requirements. Be sure to get *original* aluminum fire ladders, built by the Aluminum Ladder Co., leader in the field since 1936.

Aluminum fire ladders are built RIGHT . . . built of high tensile strength aluminum alloy for years of dependable, rugged service. They won't deteriorate because they are rust-proof, spark-proof, rot-proof and fire-proof. Careful design and construction give you a wide margin of safety at all times.

Aluminum fire ladders are built LIGHT. Stronger than wooden ladders, they weigh only half as much . . . can be extended and handled more easily with fewer men. Here is fast action where it's needed, a big safety factor in itself.

Only *original* aluminum fire ladders give you RIGHT construction, RIGHT weight for safe, efficient fire fighting. Inquire now about *original* Heavy Duty Extension Ladders and other sturdy aluminum fire ladders.



Aluminum Roof Ladder

All-aluminum ladder construction with folding hooks of the finest forged steel. Perfect for bridging across hot floors or roofs. Sizes range from 12 ft. to 30 ft., 7 in. These roof ladders can be custom-built to your own specifications.

Aluminum Pike Pole

Handles are made from alloy aluminum tubing which will not break under strain. Hooks are of strong forged steel. Stocked in 8, 10, 12, 14 and 16-ft. lengths. Special lengths if desired.

ALUMINUM LADDER COMPANY

200 CARBIS STREET WORTHINGTON, PA.

ORIGINAL MANUFACTURERS OF ALUMINUM LADDERS

Miami

FAMOUS FOR ITS CONSTANT SUNSHINE...

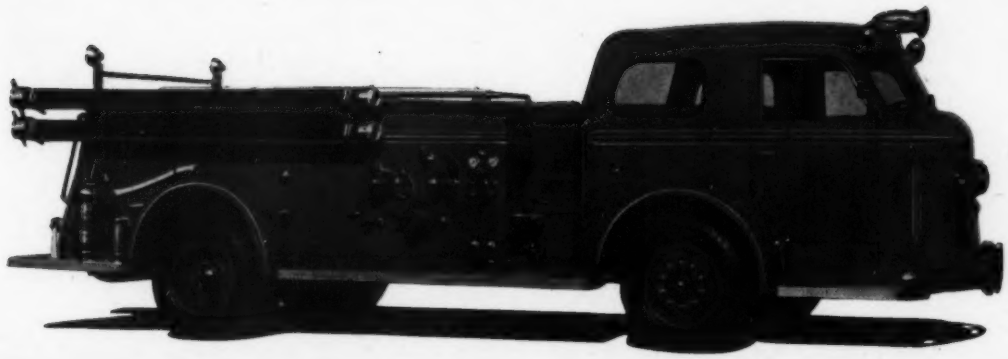
WELCOME to our exhibit of the world's finest fire engines at the I. A. F. C. Conference in Miami, Florida on November 9-12. See the new Cab-Ahead-of-Engine fire apparatus that is giving outstanding performance in service. There are now over 800 of these new American LaFrance models in service. See the new All-steel aerial ladder with its simplified power control. Demonstrations will be arranged for your personal convenience.

AMERICAN-LAFRANCE-FOAMITE CORPORATION

ELMIRA, NEW YORK, U. S. A.

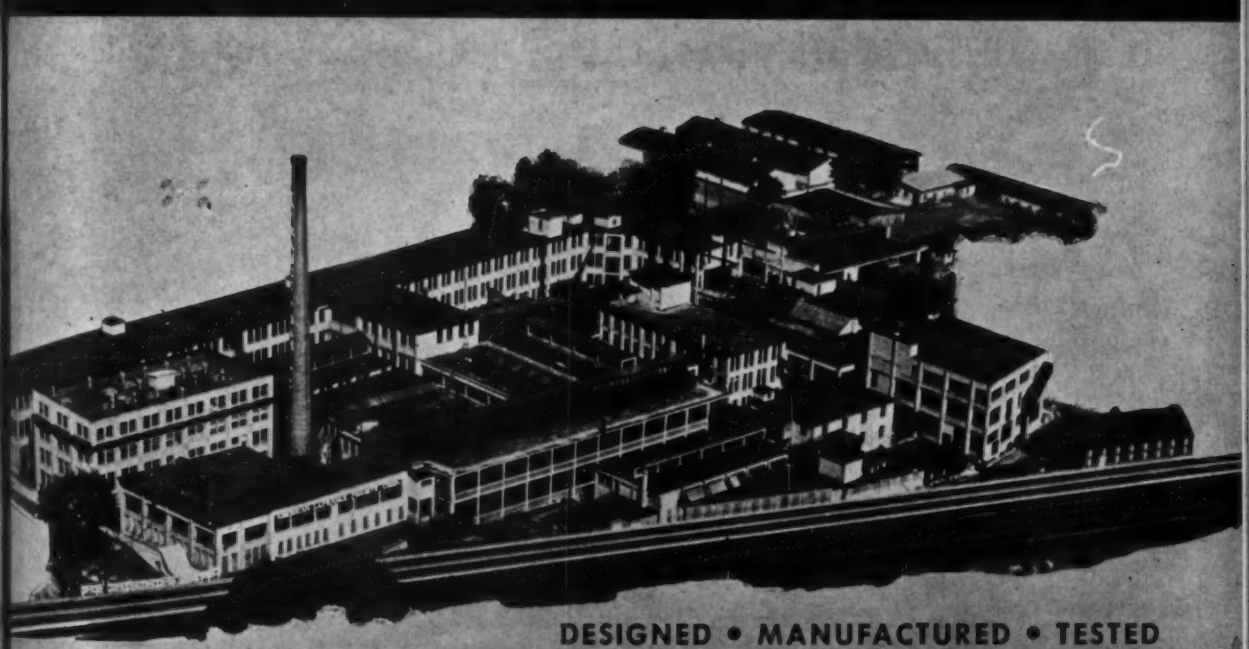
LAFRANCE FIRE ENGINE AND FOAMITE LIMITED

TORONTO 9, ONTARIO, CANADA

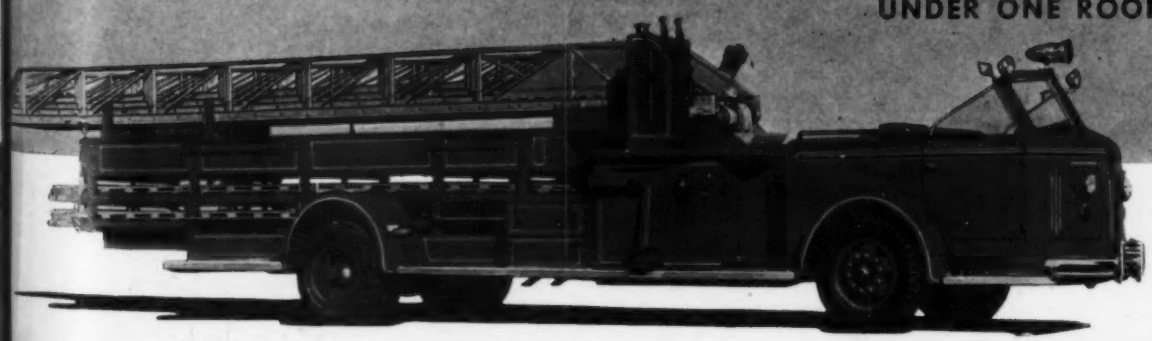


American-La France

FAMOUS FOR DEPENDABILITY AND SERVICE



DESIGNED • MANUFACTURED • TESTED
UNDER ONE ROOF



GUARDING THE LIVES OF MILLIONS FROM COAST TO COAST

WHEN YOU BUY FIRE APPARATUS

YOU MAKE A SIZEABLE INVESTMENT
AND YOU WANT TO BE SURE OF MANY YEARS OF DEPENDABLE SERVICE

THE MARS SIGNAL LIGHT

HELPS YOU TO SAFEGUARD THIS INVESTMENT

Its powerful figure 8 beam of red light—flashes a mile ahead of your apparatus, from building line to building line and hundreds of feet into the air. Traffic approaching intersections ahead of you see the powerful figure 8 red beam long before you reach the crossing. Motorists everywhere recognize this light. More than 11,000 are already in use on fire apparatus from coast to coast.

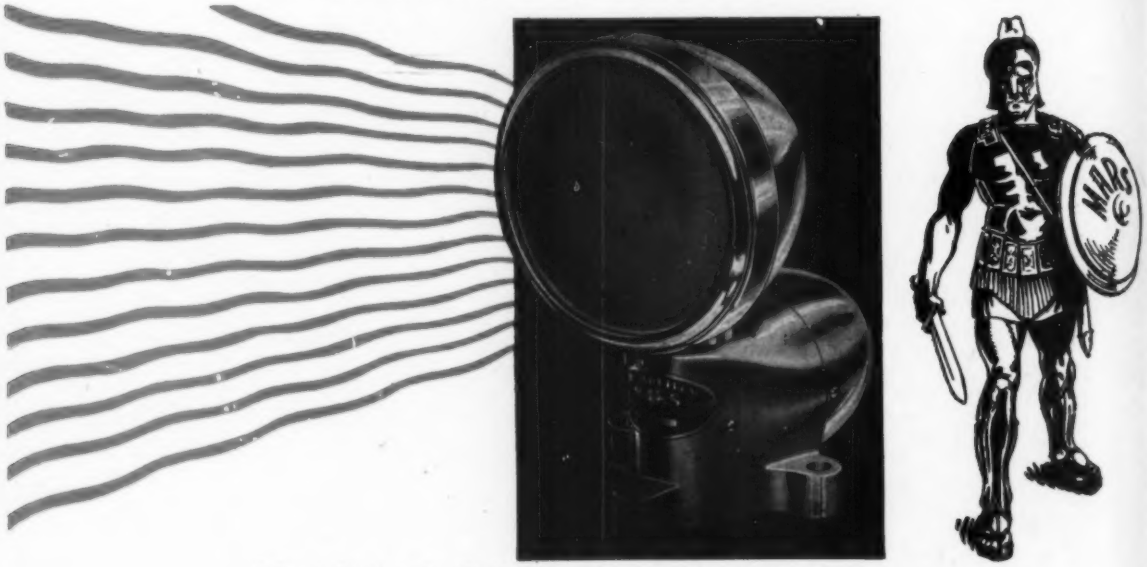
THERE ISN'T ANOTHER LIGHT LIKE IT.

MORE THAN 11,000 MARS SIGNAL LIGHTS

Have Been Installed on the Fire Apparatus of Over 300 Cities and Towns

So Far As We Know
All of These Lights Are Still Giving Satisfactory Service!

WHY BUY ANYTHING BUT THE BEST?



Mars Light Is Fully Guaranteed for Five Years
Mars Has Never Failed to Back Up This Guarantee and Never Will

WHEREVER SAFETY OF FIREMEN, APPARATUS AND THE PUBLIC IS THE FOREMOST CONSIDERATION YOU'LL FIND FIRE DEPARTMENTS USING AMERICA'S FOREMOST WARNING SIGNAL LIGHT

IMMEDIATE DELIVERY

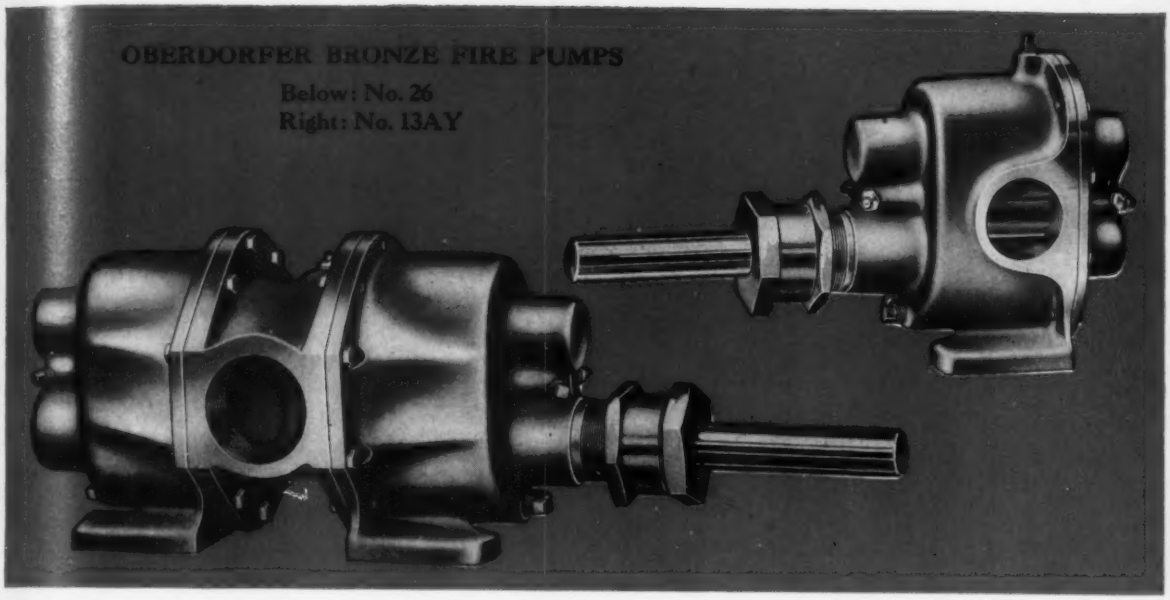
MARS SIGNAL LIGHT CO.

5737 W. DIVISION ST.
CHICAGO, ILL.

It's MARS from Coast to Coast

Insist on MARS when you order New Equipment —Install it on Present Equipment.

ALSO USED BY MANY OF AMERICA'S LEADING RAILROADS



Greater pump efficiency and longer life proved by actual experience

Year after year, hundreds of municipalities steadily purchase Oberdorfer Fire Pumps for their fire fighting equipment. They do this because long experience has amply proved the strength of Oberdorfer claims to finer performance, longer life, and lower pump costs. Here are actual performance records of the Oberdorfer Fire Pumps shown above:

Pump No.	Pump Shaft RPM	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Volume in Gal. Per Minute
13	1600	120	500′—1½″	15′	75
13	2000	100	500′—1½″	15′	100
26	1600	120	500′—1½″	15′	150

The #13 Oberdorfer Pump lists at $69.00; the #26 at $172.50. Both are *corrosion-resistant all-bronze construction* with stainless steel shaft, assuring longer useful life than iron pumps costing far more.

If you want the maximum in efficiency, performance and long life for your department's pump dollar, it will pay you to specify Oberdorfer Bronze Fire Pumps. Write for catalog and name of distributor in your vicinity.

OBERDORFER FOUNDRIES, INC., SYRACUSE, NEW YORK

OBERDORFER

Booster Pumps

The million dollar New York City Fire Boat "Fire Fighter" carries nine INVINCIBLES.

DECK GUNS *by McIntire . . . .*

ORIGINATOR AND BUILDER OF DECK GUNS AND NOZZLES USED ON FIRE BOATS AND FIRE APPARATUS

INVINCIBLE NOZZLES
BEST *by* TEST

You can be sure of "the finest nozzles and deck guns in the fire service" when you specify and get INVINCIBLE NOZZLES. Back of them are years of development and "know how." Take no chance with equipment as vital as this—specify INVINCIBLE DECK GUNS and NOZZLES.

F. N. McINTIRE BRASS WORKS
221 HIGH STREET, BOSTON, MASS.

It will help if you will mention FIRE ENGINEERING *when writing advertisers*

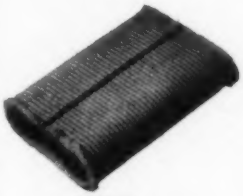
EASIER, FASTER HANDLING WITH COMPACT, FLEXIBLE BWH FIRE HOSE

Even-folding, flat-cured BWH Fire Hose stores so compactly in the truck, it's possible to carry longer lengths in less space. And that extra "reach" may mean everything in a crisis!

Originators of modern fire hose, BWH still leads the parade of progress in developing fire hose improvements. No other hose is easier to handle, or more rugged and long lasting.

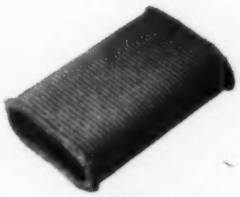
The sales agent for BWH Fire Hose in most communities is the General Detroit Corporation, famous for years as experts in fire apparatus. Dependable BWH and "General" service are therefore combined, to bring you the best possible equipment to meet your city's particular needs.

Look for the "General" trade-mark in the classified section of your phone book — call your "General" representative next time your city needs fire hose.



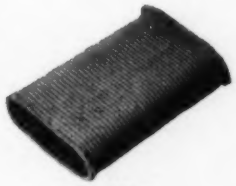
BWH
"BOSTON FIRE JACKET" HOSE
Double Jacket

Carefully pressure tested and inspected. Really rugged, yet surprisingly flexible. For cities that want the best.



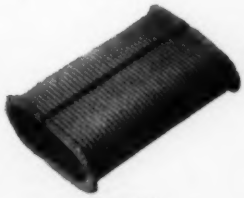
BWH
"PARAMOUNT" HOSE
Double Jacket

Famous for its flexibility, long life, dependable ruggedness. Made of fine materials.



BWH
"MILO" HOSE
Single Jacket

Big value for communities where light service hose answers. Durable, long lasting, easy to handle.



BWH
"UNDERWRITERS" HOSE
Single or Double Jacket

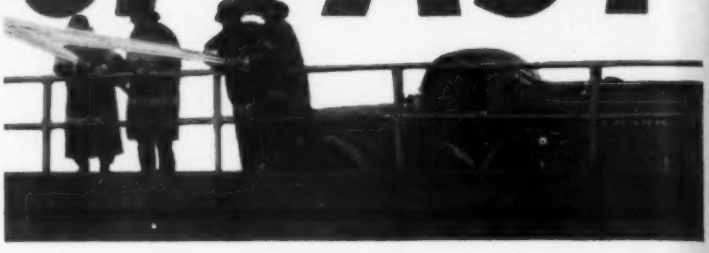
Made in strict accordance with the National Board of Fire Underwriters' specifications. Labeled or unlabeled.

NOW! Distributors of famous
BOSTON WOVEN HOSE AND RUBBER CO.
Municipal Fire Hose

THE GENERAL DETROIT CORP.
DETROIT 7, MICHIGAN
NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS
Subsidiary:
THE GENERAL PACIFIC CORP.
LOS ANGELES • SAN FRANCISCO • SEATTLE

FEED 'er FAST

with a HOMELITE Carryable Pump

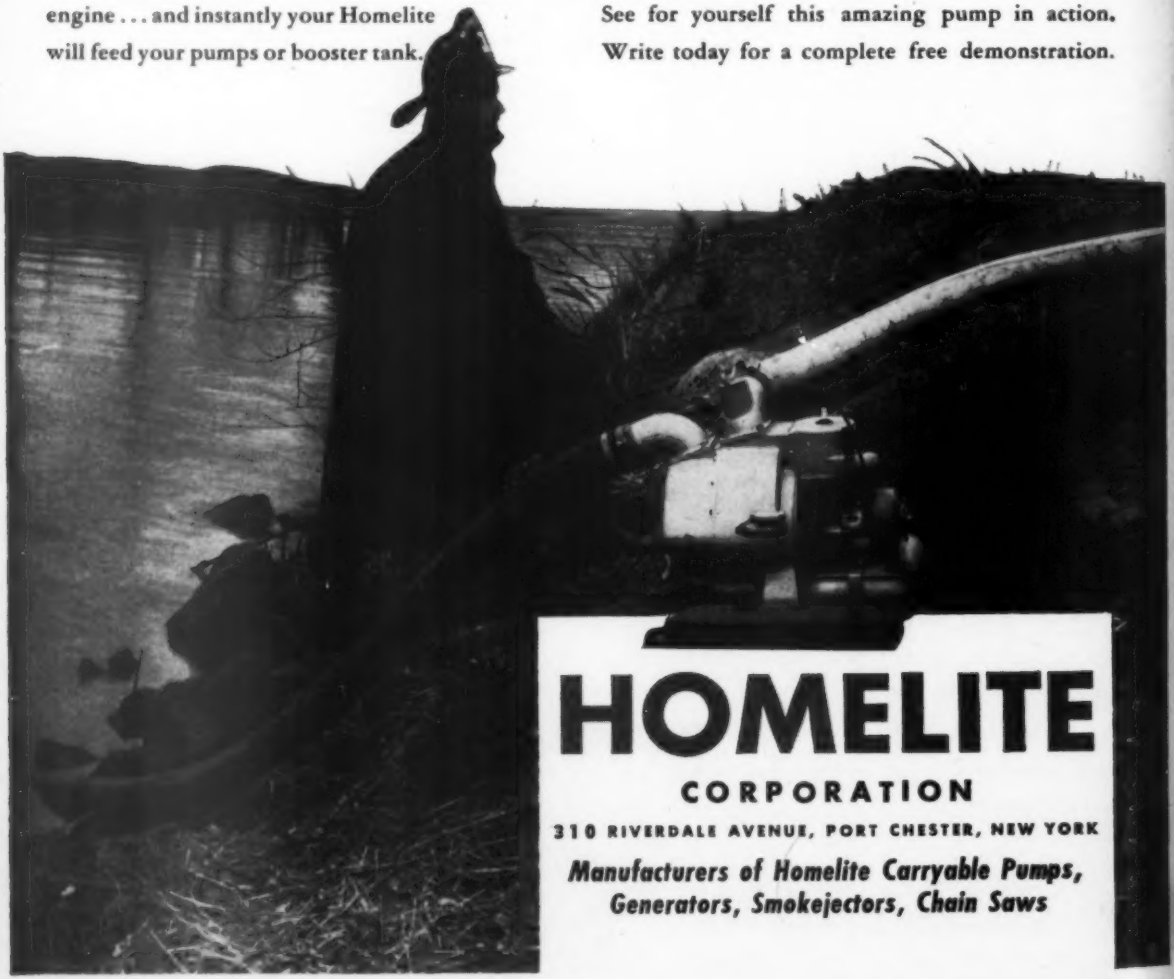


There's no worry about a quick water supply if you have a handy Homelite Carryable Pump riding on your running board.

All you do is take your Homelite Pump from the running board . . . carry it to any nearby stream, well, pond or river . . . start the built-in gasoline engine . . . and instantly your Homelite will feed your pumps or booster tank.

Ample proof of a Homelite's efficiency was given at a recent fire department demonstration . . . A Homelite Pump, set up by a small stream pumped water up 97 feet to a pumper with sufficient volume and force to operate three 1½" hoses with an 85 pound steady stream.

See for yourself this amazing pump in action. Write today for a complete free demonstration.



HOMELITE

CORPORATION

310 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

Manufacturers of Homelite Carryable Pumps, Generators, Smokejectors, Chain Saws

Now Available

A NEW Duo-Safety

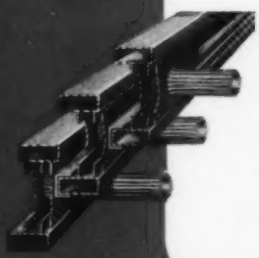
ALUMINUM PIKE POLE COMBINING

Inset view illustrates the deep, non-cutting serrations of Duo-Safety's Series 600-A Aluminum Pike Pole. Note how a firm grip can be maintained without danger of hands slipping.

STRENGTH, LIGHTNESS and *Positive-Grip!*

Here's a sensational development by Duo-Safety . . . a new, aluminum-alloy pike pole that combines the strength and lightness of aluminum, plus a positive grip feature, to provide the very best in geared-for-action fire-fighting equipment. Constructed with a rugged steel head, permanently pressed fit and riveted to the serrated tubing—serrations are smoothly rounded to furnish perfect gripping, yet there are no sharp, cutting edges. Duo-Safety new aluminum pike pole is designed to give fast action where speed and dependability count. Write for free, colorful file catalog giving full information on the complete Duo-Safety fire ladder line.

and for the best in Ladder equipment use . . .

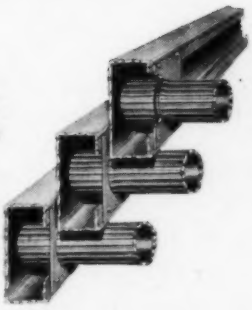


Series 500-A

TUBULAR RAIL

For Service Trucks

All-aluminum fire ladder series for service trucks. Includes two and three section extension ladders; roof, wall and folding ladders in various lengths. Extremely easy to handle, triple-strength, longer life.



Series 700-A

CHANNEL RAIL

For Pumper Use

All-aluminum fire ladder series for pumper equipment. Safe, strong, and available in two and three section extension, roof and wall ladders in a variety of lengths.

DUO-SAFETY LADDER CORP.

811 9th STREET OSHKOSH, WISCONSIN

HERE'S MORE POWER TO YOU!

Your choice of

ALTERNATOR
WEIGHT . . . . . 72 Pounds
RATING . . 14 Volts—150 Amperes

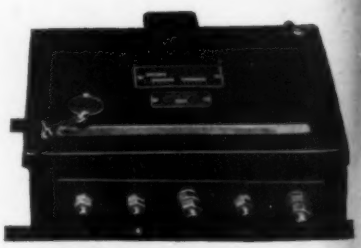
60-100 or 150 Amperes

in these 12-volt LEECE·NEVILLE A·C Generating Systems

RECTIFIER
WEIGHT . . . . . 13 Pounds
RATING . . 14 Volts — 150 Amperes

● Why worry about the abundance of electrical energy available for operating all standard and accessory equipment on *your* fire-fighting apparatus? Now you can satisfy your requirements with a 60, 100 or 150-ampere A-C Generating System. When one of these systems is built into a vehicle, you can rely on its extra high output (840, 1400 and 2100 watts) to eliminate any need for an auxiliary power plant to support flood-lighting. Specify the system recommended for your job and see how the greater current provided from idling to full engine speed will see you through any emergency.

In addition, A-C generating the Leece-Neville way offers you size reduction, less weight and freedom from commutation difficulties. Battery life is prolonged as a result of maintaining a continuous high charge level. Write us today for further information. *The Leece-Neville Co., Cleveland 14, Ohio.*



3-ELEMENT
VOLTAGE REGULATOR
WEIGHT . . . . . 7 Pounds
RATING . . 14 Volts — 150 Amperes

LEECE-NEVILLE
Pioneer and STILL Quality Leader

Other 3-unit systems for 12-volt service rated at 60 and 100 amperes. For 6-volt service there is a new 45-ampere system which can be revised after installation to deliver 60 amperes — also a new 80-ampere system.

CRANKING MOTORS • GENERATORS • VOLTAGE REGULATORS • SWITCHES

FIRST IN INTEREST
FIRST IN PERFORMANCE
FIRST IN ACCEPTANCE BY THE FIREMAN

M·S·A
Chemox
Trade Mark Reg.
SELF-GENERATING
OXYGEN BREATHING APPARATUS

MAKES ITS OWN OXYGEN!

SEE IT AT THE CONVENTION

M·S·A BOOTHS 7 and 8

WEIGHS ONLY 13½ LBS. COMPLETE
. . . APPROVED BY U. S. BUREAU OF MINES

Today's outstanding contribution to better fire fighting safety, M.S.A. Chemox in less than two years has won dominant popularity in the fire services from coast to coast!

Chemox is the only respiratory protective equipment that makes its own oxygen as the wearer breathes—providing complete breathing safety in heavy concentrations of gases, smoke and fumes. Chemox is unique in having no high-pressure cylinders, lines or valves—simple to use—easy to maintain—the only oxygen protective equipment with a replaceable canister that can be changed in a matter of moments for renewed service during emergencies!

See Chemox *now*. We'll be glad to arrange a demonstration for you at your Department—just tell us where and when! *Do you have our descriptive bulletin No. B-14?*

MSA
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS · PITTSBURGH 8, PA.
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"BADGES BY BLACKINTON": Whether you buy departmental insignia from an authorized BLACKINTON dealer or direct from our factory you are getting the utmost in quality at the lowest cost. BLACKINTON is the oldest name in the insignia field, having manufactured diestruck metal ornaments continuously since 1852. This service record is assurance that you will get precision die work, superior construction, and Super-Gloss finish on insignia so ordered. Write for a copy of our new catalog.

BLACKINTON

V. H. BLACKINTON & CO., INC., ATTLEBORO FALLS, MASS.

Please mention FIRE ENGINEERING *when writing advertisers*

RESERVE CAPACITY FOR FIRE FIGHTING

Ward LaFrance pumpers are built to exceed the required specifications set by underwriters. Ward LaFrance engineers know this reserve capacity will prove of real value in meeting unusual or unexpected situations.

For small or large fire departments, Ward LaFrance pumpers can be engineered to *surpass* all special local requirements. Ward LaFrance determines the actual conditions under which its apparatus will be used and proves performance claims by thorough road tests.

When you plan fire protection for your community, call on Ward LaFrance and get the benefit of more than a quarter century of fire engineering experience. Our enlarged and improved plant facilities now make possible more and better Ward LaFrance pumpers. Write today for illustrated bulletins and engineering advice on the pumper for your community.

WARD LA FRANCE TRUCK CORPORATION

Elmira, N. Y.

Best of Success to the 1948 IAFC Convention

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

PERFORMANCE that can't be imitated

THIS JOHN BEAN High-Pressure Fog Fire Fighter, mounted on an International Truck chassis, was recently delivered to Monongahela Valley Fire Department, Monongahela, Pa.

John Bean Fire Fighters carry their own water supply—provide two guns of 30 gallons each—850 pounds pump pressure. Delivered complete with all accessories.

YOU ARE ALWAYS SURE WITH A

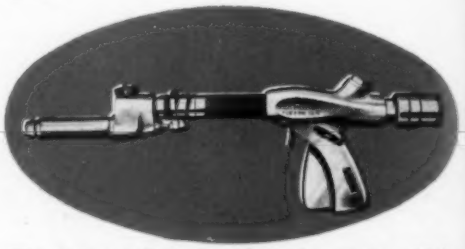
John BEAN HIGH-PRESSURE FOG FIRE FIGHTER

"Just as good as John Bean." — How often you've heard salesmen make that claim for other makes of high-pressure fog equipment!

All too often, however, fire departments purchasing such equipment have been fooled. John Bean performance can't be imitated with makeshift high-pressure units.

Be sure of constant high pressure, adequate engine power to maintain continuous and lasting fog flow. Specify a John Bean High-Pressure Fog Fire Fighter when you want *genuine* high-pressure fog.

We shall be pleased to furnish additional information on request.



The patented Bean Fog Gun. Operated at high water pressure, it gives every type of fog pattern for fire fighting. One man can operate it easily.

BEAN Original HIGH-PRESSURE FOG FIRE FIGHTER

CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

FOOD MACHINERY CORPORATION

JOHN BEAN MFG. CO., DEPT. 127, LANSING 4, MICH. • BEAN-CUTLER DIVISION, 426 JULIAN ST., SAN JOSE, CALIF.

BUILDERS OF BEAN HIGH-PRESSURE PUMPS FOR OVER 60 YEARS

Indians Settled Their Problems Around the Campfire

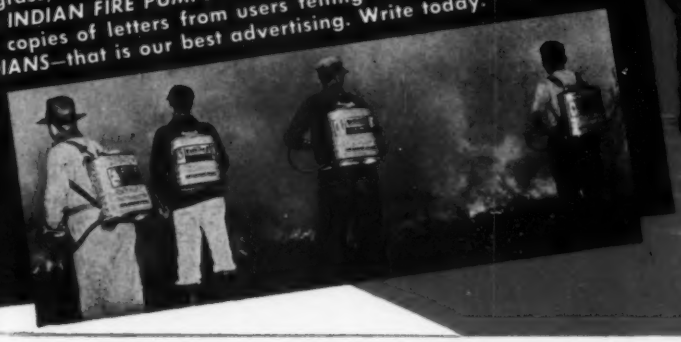
Indian Fire Pumps are available with either solid brass or galvanized tanks

You Can Settle Your Fire Fighting Problems with

INDIAN FIRE PUMPS

Since the 5-gal. form fitting, rust-proof tank carries slung on the back, a man can climb a ladder or follow a grass fire with an INDIAN FIRE PUMP many times faster than with an extinguisher he has to carry by hand. The easily operating solid brass pump throws a continuous 30 to 40 ft. pressure stream or a slight turn adjusts the fire nozzle to a strong spray.

For grass, forest, roof, building, room, rubbish and Class A fires INDIAN FIRE PUMPS have no equal. We want to send you copies of letters from users telling what they think of INDIANS—that is our best advertising. Write today.



. B. SMITH & CO. 406 Main Street UTICA 2, N. Y.

Mill & Mine Supply Co.
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Seattle, Wash.

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CANADIAN AGENTS:

Bingham & Hobbs Equip. Co.
395 W. 5th Ave.
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A Distributor serves you Best

The jackets of Republic Fire Hose, made only of selected yarns and long ageing tubes, are plain Provar Mildew Resistant, and waxed, or in any combination. Five municipal grades, 3 industrial grades (also made with rubber or neoprene covers), and light-weight hose for forestry service are available.

YOUR DISTRIBUTOR OFFERS DOUBLE RESPONSIBILITY FOR PRODUCT SATISFACTION

25th Anniversary

1948 marks the 25th Anniversary of Republic Rubber Division's 5-Point Sales Policy. This policy, by intent, provides service to industry through carefully chosen distributors rather than branches, because, Republic believes it's a more economical and efficient way of doing business.

Your distributor is responsible for the good performance of the products he sells you . . . SO IS THE MANUFACTURER.

This double responsibility places purchasers in a safe and advantageous position, providing the policy of both the source of supply and the source of outlet is clearly understood. Republic Rubber's distributors are chosen for "Policy" and distributors choose Republic because of Republic's 5-Point Sales Policy. Such a combination is truly "double responsibility."

MECHANICAL RUBBER GOODS BY

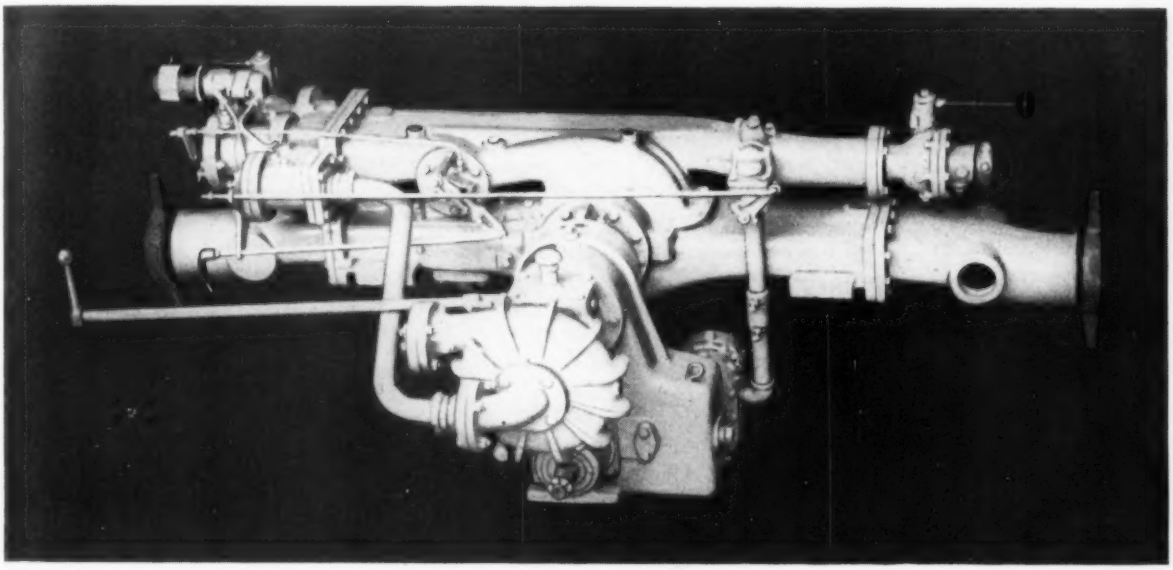
REPUBLIC RUBBER DIVISION

REPUBLIC RUBBER DIVISION
LEE RUBBER & TIRE CORPORATION . . . YOUNGSTOWN, OHIO
Lee Deluxe Tires & Tubes, Conshohocken, Pa.

Announcing the NEW

HALE TYPE HPZL

- ***HIGH PRESSURE FOG: At 600 lbs., 60 to 120 GPM***
- ***UNDERWRITERS' RATING: At 120 and 150 lbs., 500 and 600 GPM***



The Hale HPZL centrifugal combines standard Underwriters' performance with High Pressure Fog—built into ONE AMIDSHIP PUMP.

Designed for versatile fire fighting, the Type HPZL adds to high pressure performance (600 to 700 lbs.) the flexibility and safety reserve of a 500 and 600 GPM pump, thus meeting Underwriters' requirements.

It provides HIGH PRESSURE to handle those fires where high pressure fog is effective, PLUS volume and pressure operation to fight the big fires.

The HPZL has three stages to cover most efficiently its wide range of performance.

This is the latest addition to Hale Fire Pumps, built in all standard capacities and sold only through makers of Quality Apparatus.

For Complete Details Write-

HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

FIRE PUMPS HALE CONSHOHOCKEN PA

● Be sure to see the HPZL on Display at Miami—Booths 43 and 44.

You get greater performance OUT of Macks

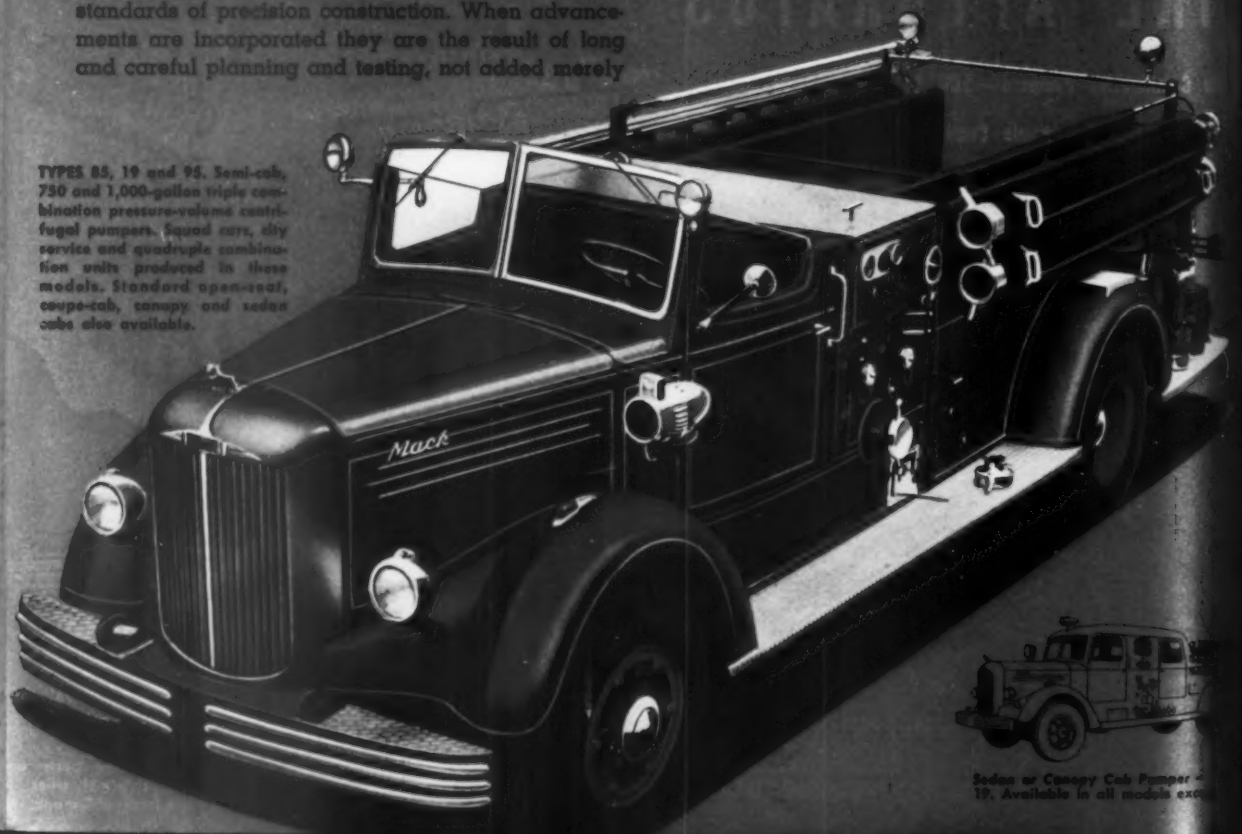
because we build greater performance INTO them

MACK fire apparatus deliver pace-setting performance because they are the products of the greatest research, engineering and manufacturing facilities in the industry. Designed from start to finish for fire-fighting service, every Mack represents the skill and knowledge gained from 38 years of continuous automotive fire apparatus production. These have been years in which Mack has pioneered – and is *still* pioneering – many basic features of modern fire apparatus design.

Today, no other fire equipment producer manufactures as many of its own components as Mack. Engines, frames, running gear, bodies – all are Mack-designed and made in Mack factories to the highest standards of precision construction. When advancements are incorporated they are the result of long and careful planning and testing, not added merely to create new models or talking points.

Moreover, every investment in Mack fire apparatus is protected by a nation-wide network of 67 Mack factory branches and over 600 dealers – a ready source of skillful service and a dependable parts supply. No Mack model is ever an "orphan"; its in-built peak performance and rugged reliability at all times can be quickly and easily maintained.

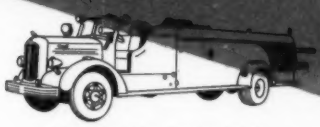
You get greater performance *out* of Macks because we build greater performance *into* them, as the records of over 1,000 departments show. When planning your next purchase of fire apparatus, regardless of requirements, remember that you serve your community best when you *Modernize with Macks.*



TYPES 85, 19 and 95. Semi-cab, 750 and 1,000-gallon triple combination pressure-volume centrifugal pumpers. Squad cars, city service and quadruple combination units produced in these models. Standard open-seat, coupe-cab, canopy and sedan cabs also available.

Sedan or Canopy Cab Pumper 19. Available in all models exc

TYPE 45. Open-seat, triple combinatio
pressure-volume centrifugal pumpe
Also produced in squad cars and air
service units. Standard semi-cab an
deluxe coupe-cab also available.



Open-seat City Service Truck, Booster-Equipped — Type 85.

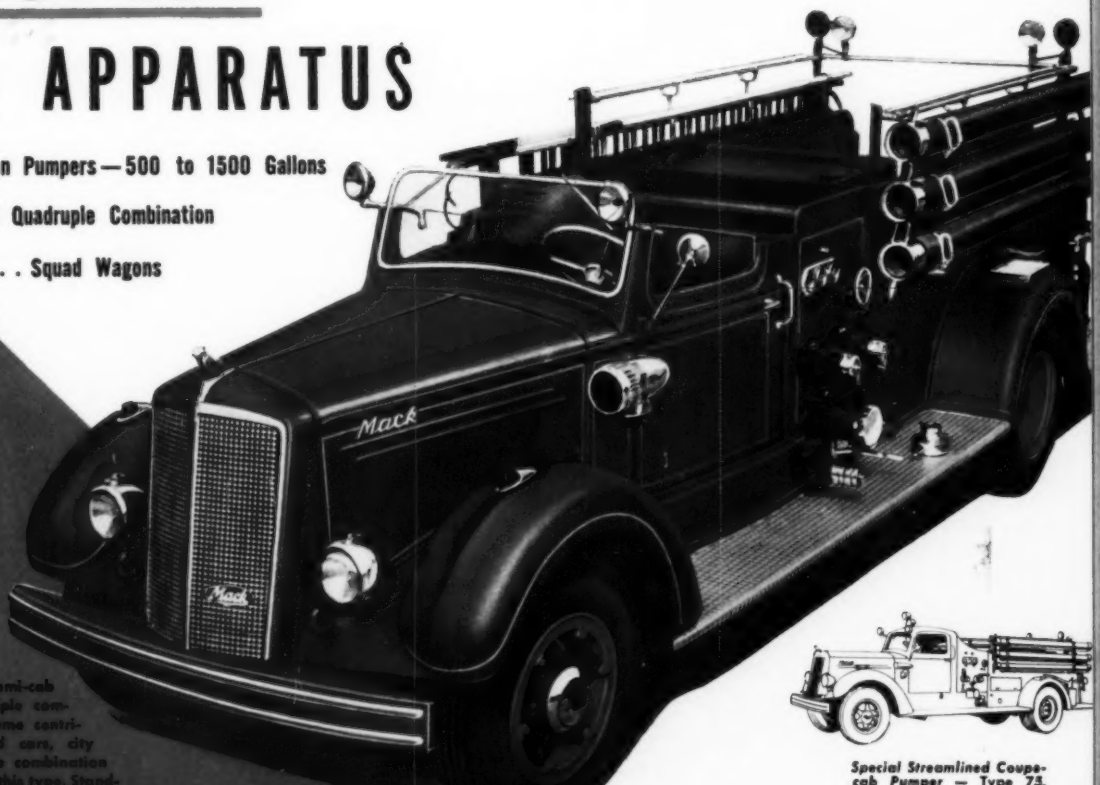
Mack

FIRE APPARATUS

Triple Combination Pumpers—500 to 1500 Gallons

Service and Quadruple Combination

Trucks . . . Squad Wagons



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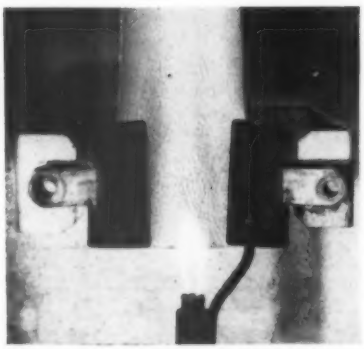

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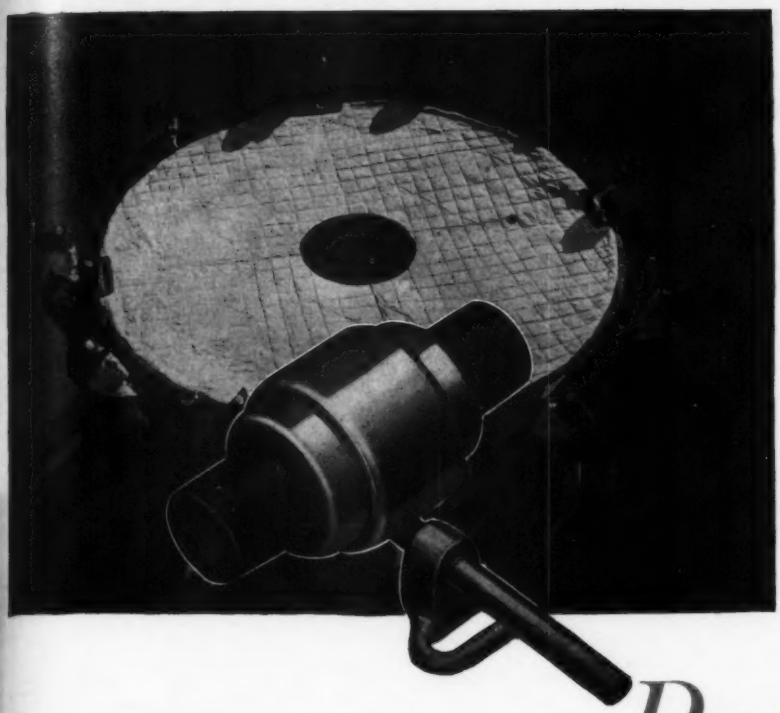

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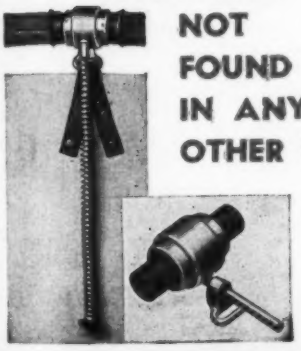

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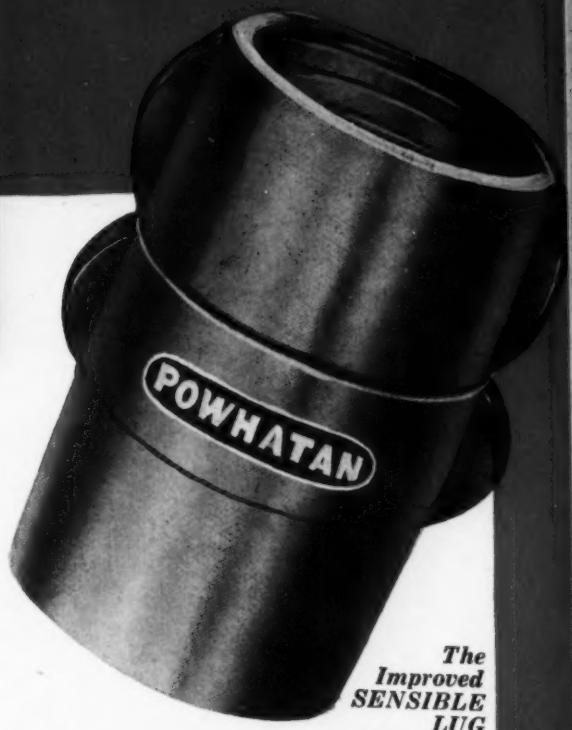

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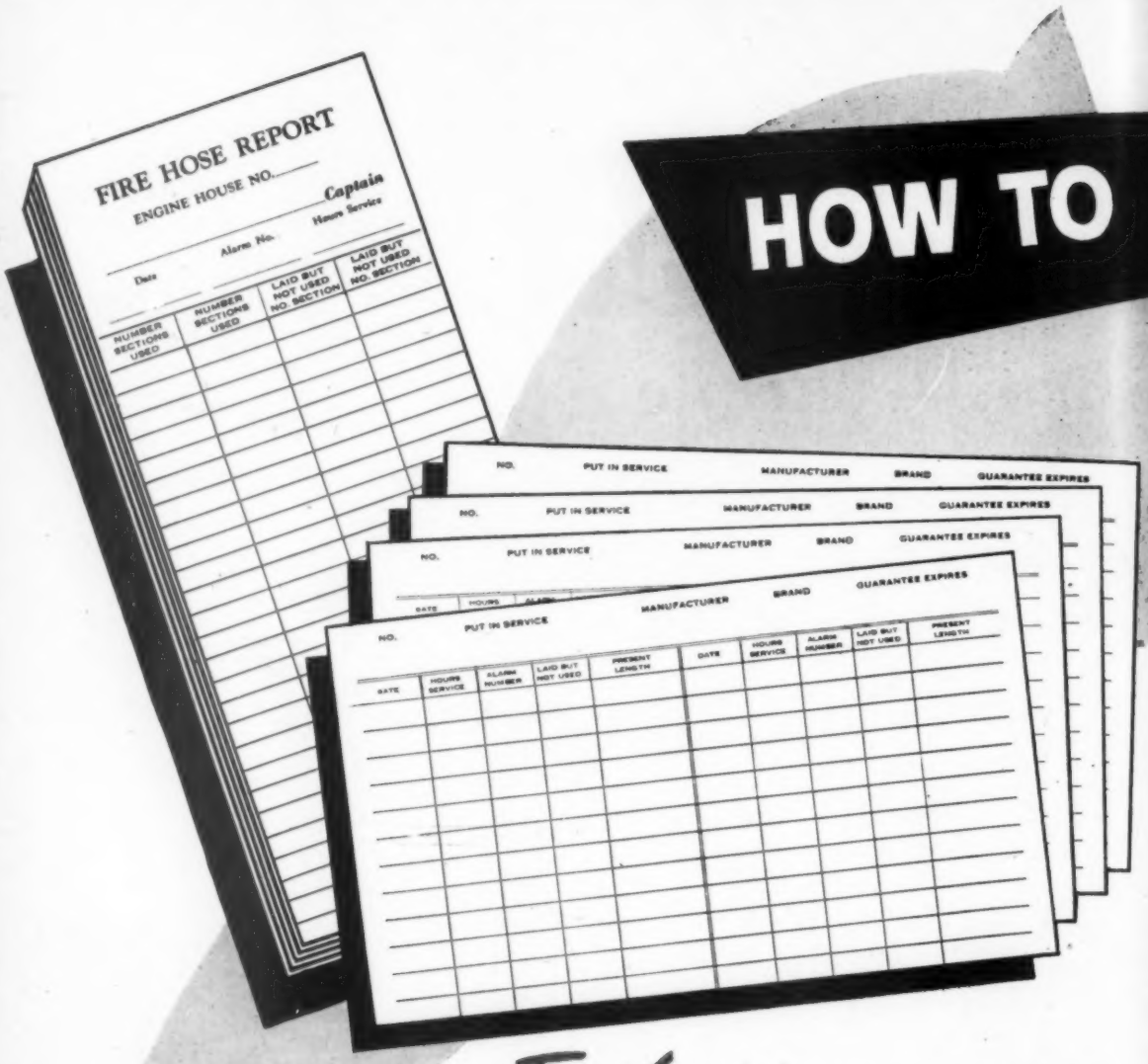

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Fights Fire Faster

Only the Fyr-Fyter **INSTANT** extinguisher gives the 6-way protection of the "loaded stream"

You are looking at a fire extinguisher totally unlike any other manufactured today.

Here, for the first time, you can get six important fire fighting features . . . all combined in one easy-to-use extinguisher approved by the Underwriters' Laboratories.

How is this possible? The answer is *Karbaloy*, a revolutionary "loaded stream" chemical. Instead of conventional chemicals, the Fyr-Fyter INSTANT is charged with *Karbaloy* under stored pressure. Simply by tapping the plunger on the ground or floor, the *Karbaloy* charge is forced from the INSTANT in a long, powerful stream.

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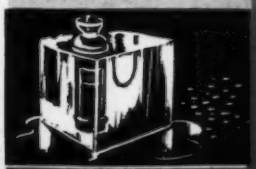
2 **RETARDS RE-IGNITION** . . . even excelsior sprayed by Karbaloy can't be ignited by blowtorch.

3 **ANTI-FREEZE** . . . the Instant operates perfectly at temperatures down to 40° below zero.



4 **EASY-TO-USE** . . . just invert, tap plunger on floor or ground, play stream on base of fire.

5 **MORE EFFICIENT** . . . 1¾ gallon Instant does better job than 2½ gallon conventional types.

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For complete information, have your Midwestern dealer show you our new garments now manufactured from crude rubber compounds. A letter to the factory will also bring you material samples for your inspection.

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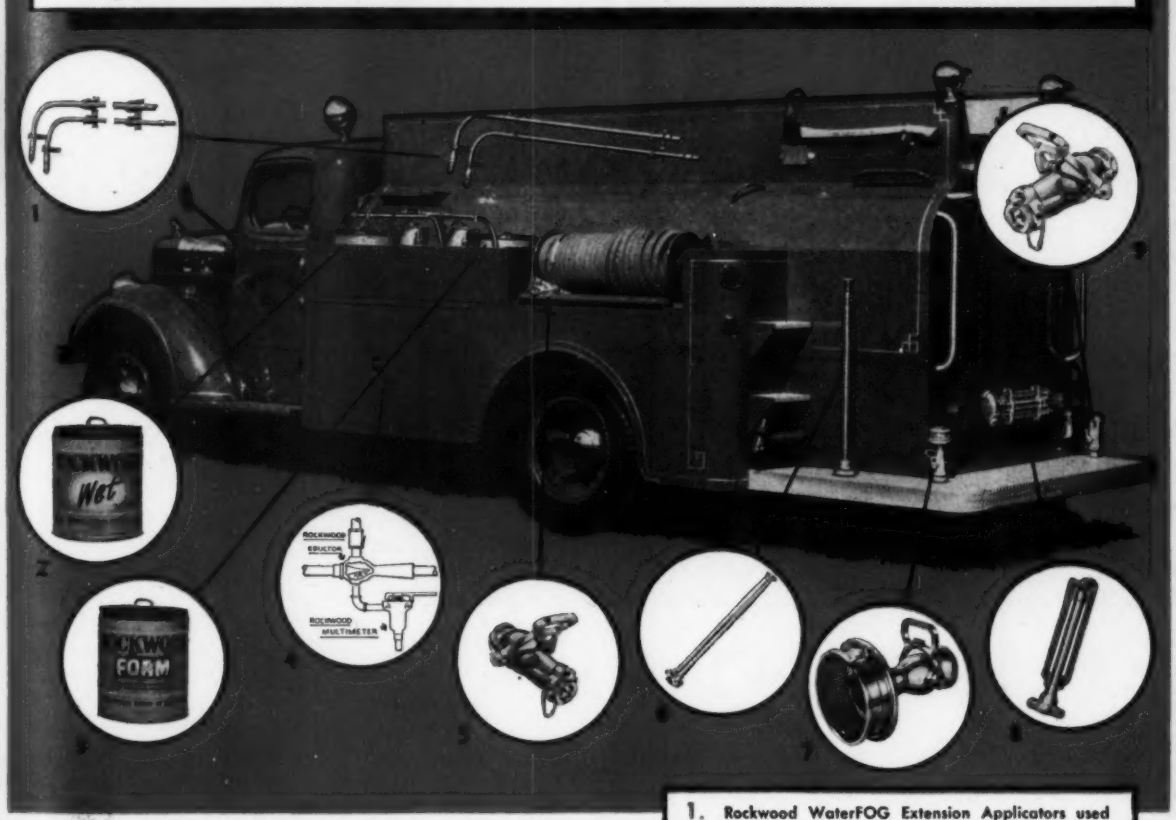
in places where there are no HYDRANT SYSTEMS



NEW "HOLDEN FIRE COMBAT UNIT" CARRIES WATER TO RURAL FIRES. MAKES WATER GO FARTHER WITH ROCKWOOD WATERFOG AND FOGFOAM EQUIPMENT COMBINED WITH ROCKWOOD "WET" AND FOAM LIQUID.

Rural areas can now obtain modern fire protection that has been available heretofore only in large cities and towns equipped with their own hydrant systems. The "Holden Combat Unit" makes this possible.

This new unit featured in a recent issue of Reader's Digest, carries 800 gallons of water to a fire. It has a pump with the capacity of 120 g.p.m. at 180 p.s.i., 1600 feet of 1½" CRL hose and 2 reels each with 200 feet of ¾" booster hose.

The designers of this advanced type of rural fire fighting truck have had the foresight to outfit their trucks with the first word in Rockwood fire fighting products which were designed to get the maximum extinguishing action out of every drop of water carried by the truck.

Rockwood products are illustrated above and described in the next column.

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3. Rockwood Foam Liquid.
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7. Type FFF Rockwood FogFOAM Nozzle generates a mixture of water and Rockwood Foam Liquid into a FogFOAM discharge which extinguishes gasoline fires.
8. New type Rockwood cellar and attic pipe makes water more efficient in fighting fires in blind spaces.
9. Lightweight Rockwood WaterFOG Nozzles (type SG-48) are used on the two 1½" hose lines to help stretch the water.

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Many Gamewell boxes installed 70 or more years ago are still giving dependable service — which explains why *Cities Prefer Gamewell.*

We invite your inquiry.

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FIRE ENGINEERING

OCTOBER, 1948 VOL. 101, NO. 10

With the Editor

Fire Service Communications

Reviewing the trends and indices of the past year in the communications field, the evidence appears inescapable that the fire service is not making the forward progress that it should in this essential service.

In simple words, we are not progressing as rapidly in improving our fire service communications facilities as we are other essentials for the control and extinguishment of fire. This lack of Progress must, in large measure, be laid squarely at the door of the fire service. Modern science has created and developed the desired improvements in all fields of communications; but the service has been woefully backward about utilizing them.

Serious study of the nation's fires, with attendant loss of life and property, will bear out our contention. It is quite evident that inadequate communications facilities have been a contributing factor in our mounting fire losses. Delayed alarms continue to plague firemen, and increase the number and severity of large fires. There is no lessening in false alarms; instead, in many cities they are on the increase. Inadequate and ineffective communications facilities on the fire ground, particularly where the fires are of considerable extent, continue to complicate the task of control and extinguishment, despite the advent of modern radio, voice amplification and other improvements.

Expansion and modernization of municipal fire communications systems have not kept pace with even normal growths in population, increased building and so on. Modernization of existing fire alarm systems has likewise failed to keep pace with progress in other fire service essentials. It is disturbing to note the complacency on the part of fire chiefs, and those responsible for fire communications in placing reliance on outmoded signal systems, ancient boxes, overhead wire circuits and alarm bureau mechanical facilities. In many cities the heart of the vital communications systems is poorly located, housed in fire traps and from every viewpoint unsuited to the purpose for which they were intended.

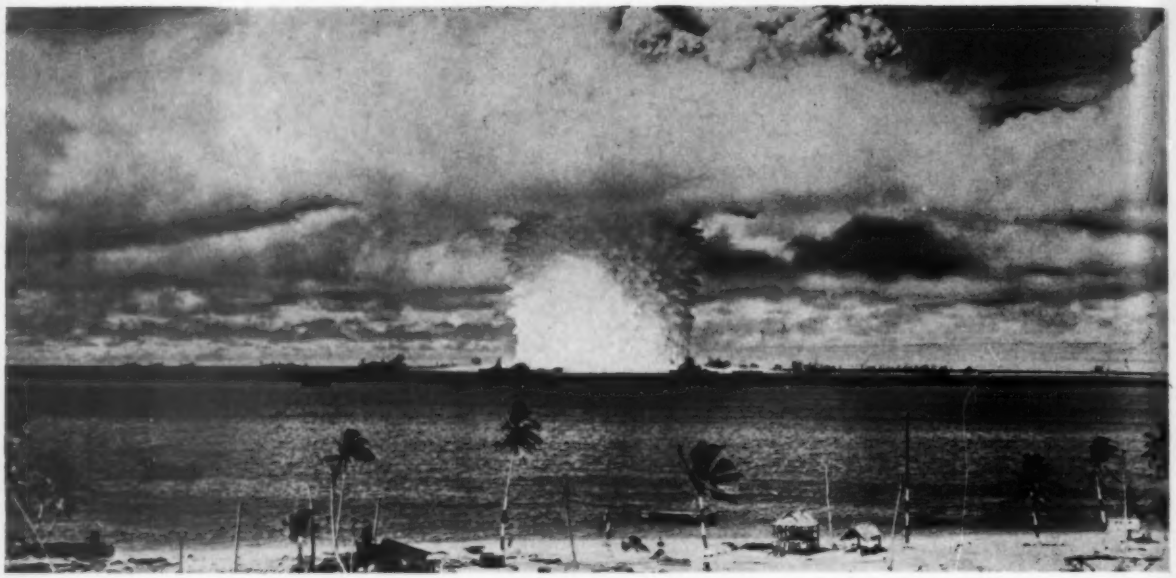
Matching this slow progress in mechanical facilities is the failure to improve the human equation.

Those in charge of this critical essential all-too-often lack the rank and recognition to which their calling entitled them. Salaries are generally inadequate. Training and opportunity for advancement are not what they should be. And we strongly suspect that there does not exist the complete cooperation between the communications and the fire fighting forces that there should.

It is not our province to attempt to place the blame for this condition. Indications are that much of the difficulty lies in the failure of city, town and village government to provide the wherewithal for the necessary improvements. Another thing, the public generally, and the taxpayer in particular, know little or nothing about fire service communications. They see colorful fire apparatus and its crews enroute to, and at work on the fire, but they still remain ignorant of the split-second operations, and equipment and the personnel responsible for the actions which thrill them. No, there's no thrill in fire alarm communications, from the public's viewpoint. Hence, little incentive to "shell out" for its advancement.

Here, it would seem, is opportunity for better public relations, for doing a selling job. The place to start, we believe, is within the fire service itself. Let's have more cooperation, greater coordination of men and machines. Let's set our own house in order first, and then get a new "house"—and new "furnishings." The plant improvements so vitally needed will never come without improved policies and programs. Let's get at them right away!

Fred Sheppard



Another Atomic Blast That Made History

This widely published photograph shows the first underwater atomic bomb explosion, at Bikini. Water column was 2,000 feet across at base and reached a height of 5,000 feet. Warships in area around blast were unoccupied craft, used in the test to determine blast effects.

What the Fire Service Should Know About the Atomic Bomb

In the preparation of this article, the editors have drawn very heavily upon a series of two articles which appeared in the Bulletin of the U. S. Army Medical Department (Vol. VIII, No. 5 and Vol. VIII, No. 7, 1948). These two articles, from which the excerpts have been made, present in a very concise, yet comprehensive manner, data which are understandable to the men who have had little or no chemical engineering training.

They also provide convincing argument that a great deal remains to be done in the preparation of our American fire departments for handling this new and awesome agent of destruction, and possible future agent of peacetime power production. Though other nations than England, America and Canada may not now possess the secret of the atomic bomb, nor the facilities for manufacturing it, it is generally conceded that this condition will have changed within the next few years. And should the present tense situation existing between nations flare up into open warfare, it is quite certain that American fire fighters will have to face the task of combatting fires brought about by atomic warfare.

—THE EDITOR.

THE atomic bomb is primarily a strategic weapon, and the choice of target and method of employment require the evaluation of a number of factors. Thus far, five atomic bombs have been detonated, three of them under test conditions. The one factor that makes an atomic bomb detonation different from the detonation of any other type of weapon is the nuclear radiation produced. All high-explosive weapons produce high temperature and high blast pressure, and the only difference in these respects between atomic and conventional weapons is the increased magnitude of the blast and thermal effect produced by the atomic bomb. However, no other weapon devised to date is capable of releasing nuclear radiation.

The first bomb was set off under experimental conditions from a tower near Alamogordo, New Mexico, on July 16, 1945. The second bomb was dropped August 6, 1945, on the city of Hiroshima from a B-29 bomber. Over four square miles of the city were instantly and completely devastated; 66,000 people were dead or missing and 69,000 were injured. On August 9 another B-29 dropped an atomic bomb on Nagasaki, totally destroying 1.5 square miles of the city. The number of persons dead and missing in Nagasaki was 39,000, and 25,000 more were injured. The fourth atomic bomb was dropped by a B-29 on target vessels assembled in Bikini lagoon on July 1, 1946, and the fifth was detonated under water on July 25, 1946. Test animals placed on various locations on the target vessels yielded important data on the bomb effects. This work was under the supervision of the Naval Medical Research Center.

The detonation of the atomic bomb generates a crushing wave of high pressure. The bomb also liberates an enormous quantity of electromagnetic radiations and neutrons. The electromagnetic radiations included infra-red, visible light, ultraviolet, x-ray, and gamma radiation. Thereafter, the fission products formed emit gamma rays and beta particles. The unfissioned bomb residue emits alpha particles. Substances bombarded by neutrons released at detonation, which become radioactive by induced radioactivity, may also emit nuclear particles and gamma rays. A large fraction of the gamma rays is emitted in the first few microseconds (millionth parts of second.—Ed.) of the atomic explosion. Neutrons also accompany this reaction. The range of neutrons is negligible at 1,000 yds. because of their absorption in the air. In an underwater burst, greater absorption occurs, resulting in induced radioactivity of the sea water.

At detonation, practically all of the lethal gamma radiation is released, and the remaining small fraction of the total dose is given off by the resultant fission products that rise rapidly in the bomb cloud. The column of radiating fission products and combustion material rapidly rises into the air and begins to mushroom out when the temperature of the column is equal to the temperature of the surrounding atmosphere. The climatic and meteorologic conditions will govern the diffusion, dispersion, and radiation activity of the cloud. The fissioned and unfissioned material in an airburst will be distributed in the atmosphere; while in a sub-surface waterburst, the adjacent water, ships, and facilities in proximity to the detonation will be seriously contaminated. Fission products in the cloud may be dispersed as fine particles of varying size, and depending on many factors, a shower of the radioactive material will fall on nearby areas. The fission products,

therefore, present a continuing health hazard for a considerable time as an aftermath of the explosion. In general, regardless of the technique of bomb detonation, radioactive materials emitting alpha and beta particles and gamma rays will be be encountered. The radioactivity of these substances will range from a few seconds to years.

In the underwater detonation of the bomb, thousands of tons of water rise in a column, a few thousand feet in the air, followed immediately by a rapidly moving mass of water, constituting the base surge. The turbulent waters contain a high percentage of the fission products and unfissioned residue. Immediately at detonation and for a short period thereafter an enormous amount of radiation is emitted. The falling column of water and mist, depending on wind conditions and depth of detonation, contains a high percentage of the fission products and unfissioned residue that can contaminate an area of several square miles for a considerable period.

The emission of infrared, visible and ultraviolet light occurs a few milliseconds after the explosion. The ball of fire in the airburst grows rapidly in size. As it grows, its temperature and brightness decrease. Several milliseconds after the initiation of the explosion, the brightness of the ball of fire is several times the brightness of the sun. Most of the infrared and ultraviolet radiation is given off after the point of maximum intensity. The ball of fire rapidly expands from the size of the bomb to a radius of several hundred feet at one second after the explosion. Thus, the infrared and ultraviolet radiation comes in two bursts—an extremely intense one lasting a fraction of a millisecond and a less intense one of much longer duration lasting several seconds.

The heat from the flash in an airburst occurs in a short time, and since there is no time for any cooling to take place, the temperature of a person's skin can be raised 50 degrees C. (90 deg. F.) by the flash of infrared and ultraviolet rays in the first millisecond at a distance of over 4,000 yards. People may be injured by flash burns at even greater distances. Gamma radiation danger does not extend nearly so far, and the neutron danger zone is still more limited. High skin temperatures result from the first flash of high intensity infrared and ultraviolet and are probably as significant for injuries as the total doses that come mainly from the second, more sustained, ball of fire.

Effectiveness Against Personnel

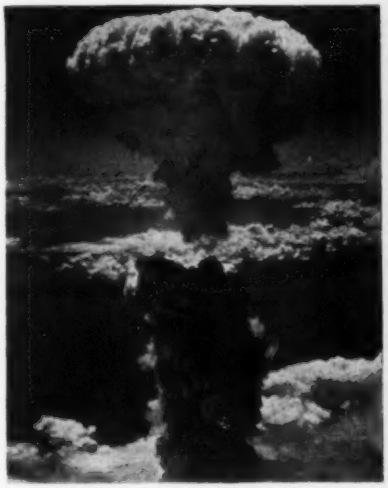
For personnel in the open, within one-half mile of zeropoint of the airburst detonation, death would occur almost instantaneously or within a few hours from the blast, heat and radiation effects. Within a radius of one-half mile and one mile from zeropoint, some persons would die instantly, while a majority would receive varying degrees of injury. Ordinary houses and structures would suffer complete destruction or extensive damage and fires would be widespread. Outside a radius of one mile and within a radius of two miles from zeropoint, personnel would suffer injuries from flash burns and indirect blast effects. Outside a radius of two miles and within a radius of four miles, personnel would be injured by flying fragments and suffer superficial wounds. Structures would be half or partially destroyed within this radius. In an airburst explosion 70 per cent of those exposed would suffer from trauma (injury or wound.—ed.), 65 per cent from burns and over 35 per cent from radiation.

The Radiologic Hazard

In general, any radioactivity that remains in the area as fission products or induced radioisotopes will constitute a hazard. Fission products from the airburst bomb may be dispersed in the ground or spread out over wide and diffuse areas, depending on the technique employed in the detonation. Consequently, the degree and extent of residual radioactivity would depend on the height of detonation, climatic and meteorologic conditions conducive to the showering of the products on a specific area, and the nature and composition of the terrain. For example, because of the height of the detonation, certain prescribed areas of the bomb crater might remain hazardous. Also, because of the composition of the ground, dust particles intermixed with fission products might rise in the cloud. Many of these "dust particles" might also become radioactive as a result of neutron bombardment released at detonation and thus contribute to the hazard.

When the bomb is detonated over a modern city that contains countless thousands of items composed of iron, zinc, copper, and other "neutron capture materials," it is possible that many of the elements within the effective neutron range may become radioactive for a considerable period. In an underwater burst the main hazard, following detonation, will be the result of the deposition of a large percent of the fission products in the water and on nearby objects.

The radiologic hazard can be divided into two phases. The first phase includes the immediate or prompt release of any ionizing particles or radiations caused by the explosion during the period of visible flash of the bomb. These prompt ionizing radiations include beta particles, neutrons, x-rays, gamma and alpha particles from unfissioned bomb residue, and the ionizing radiations from fission products. After the flash of the bomb has subsided, a matter of a few seconds, the delayed phase of the radiologic hazard is of importance. The hazard here is from fissioned and unfissioned material and from radioactive elements induced by neutrons from the explosion. The nature and persistency of the second phase depends on the technique of detonation. In addition to the phase of the radiologic hazard, the protection problem depends on whether the radiation concerned is external or internal to the body. Alpha particles, for example, present no external hazard; but if they are inhaled and become fixed in the bone, depending on the amount, the results may be lethal. Although very little can be done to protect personnel in the



Here's the Second Atomic Explosion and the One That Ended the War with Japan

Smoke billows 20,000 feet above Nagasaki, Japan, after second atomic bomb attack on that country. Driven with such volcanic-like force that it ascended in almost a straight line, the smoke did not even begin to billow out until it passed through cloud layers at 20,000 feet. The city of Nagasaki lies at the bottom of the lower, black smoke column.

What an Atomic Bomb Explosion Looks Like

Here's a picture, taken from a distance of several miles, which shows an atomic bomb exploding. The photograph was taken the instant the bomb was detonated. The bomb was exploded several thousand feet above the earth.

open within the lethal range at the instant of detonation, a few points in connection with the second phase may be useful.

The relative protection against gamma radiation by shielding, in order of effectiveness, is given by lead, iron, concrete, earth, water, and air. Using the gamma radiation from radium as an illustration, a 5-inch thickness of concrete gives about the same protection as a 1-inch layer of lead. Where no shielding is available, "distance" is the best means of protection. It should be noted that neutrons pass through lead with extreme ease, but are readily absorbed by hydrogenous materials and boron.

The Flash Burn

At detonation, the flash burns from infrared and ultrared caused a higher percent of casualties than the radiologic effect, because of the increased range of the flash. Light shades of loosely fitting clothing, antiflash cream, and protection of the entire body surface will reduce the percent of casualties. Protection by these means will not reduce the effects of burns produced by secondary fires in buildings or facilities. The problem here is to minimize the amount of inflammable material as far as practicable. Flash burn is not a serious factor in an underwater detonation.

To sum up, airburst atomic bombs will produce lethal effects over an area of two square miles and measurable effect over an area of seven square miles as a result of the prompt gamma radiation emitted at the time of detonation. The residual radioactivity is of little importance except in the area close to the center of a low-altitude explosion. In an underwater detonation, radioactive fission products and unfissioned material will be spread by the cloud and base surge over a large area. The gamma radiation from these materials will be lethal to exposed personnel more than two miles downwind, and serious contamination will result at much greater distances. This contamination will provide a serious hazard for an indefinite period. Prompt evasive action at the time of the detonation will permit the reduction of casualties, and orderly evacuation and re-entry procedures will undoubtedly pay great dividends in minimizing the effects.

Protection Against Atomic Bombs

The important effects of the atomic bomb against which protection must be developed are: (1) the blast or shock wave; (2) visible light, ultraviolet, and infrared radiations; (3) nuclear radiation; and (4) psychological effects.

Blast: The effects of the atomic bomb rapidly decrease in intensity as one moves away from the point of detonation; thus, distance is always the best protection. Primary shock, or blast damage is defined as the compressive and tearing action of the shock wave on the human body. When one interposes between the blast and the body an object of strength similar to that of an ordinary wall, this form of damage is effectively reduced. Primary shock is thus of importance only when a person is in the open, in which case he is exposed simultaneously to lethal amounts of other effects of the atomic bomb. Living things are remarkably resistant to blast damage and are much stronger in this respect than normal buildings. Underground shelters and normal reinforced concrete buildings protect against this effect very close to the point of detonation. Hemorrhages of the lung occur from blast damage in its mildest forms. In its severest forms major abdominal hemorrhages appear.

Secondary shock, or blast damage, is caused by flying objects hitting and and lacerating the body. A shock wave is very much like a wind of several hundred miles per hour, arising instantaneously, and lasting for about a second. This wind is strong enough to throw the body several feet. It also breaks windows, knocks down plaster, and throws other objects around with great violence. When these objects strike a person, secondary shock damage results. There are many things a person can do for himself to reduce his chances of this type of injury if he has some advance warning of the detonation. He should keep away from windows and lie flat on the floor or ground. He should avoid standing under overhanging cornices, chimneys, and other heavy objects that are easily knocked down. Underground installations or shelters greatly reduce this effect, because very little of the air shock is transmitted through the ground and thence into shelters or basements. In Japan, this form of injury combined with burns accounted for most of the casualties. The rapid follow-up of the fire on the blast damage caused many deaths among the injured. Injuries of this type require evacuation and hospitalization. In the case of primary shock damage there is an amazingly small boundary zone. One is either killed immediately or is all right after a few minutes, so far as this effect is concerned. There is much that can be done in the design of vital installations to reduce damage from these secondary shock effects.

Flash burns are injuries created by direct exposure to the visible and near-visible radiation emanating from the point of detonation. The thinnest type of nontransparent material will shield effectively from this effect. Light-colored clothing is particularly good as it reflects almost all this radiation. Dark clothing will not transmit this radiation but will catch fire and produce flame burns on the skin beneath the clothing. This form of damage is important only when a person is in the open and in direct line of sight with the point of detonation. Because of the nature of the atomic bomb, this form of damage occurs at greater distances than those caused by any other effect.

Flame burns are produced by fires started in inflammable materials or buildings. These were prevalent in Japan, but they would occur to a lesser degree in an American city. This possibility of fire and subsequent injury can be greatly reduced by making structures less inflammable. *The development of large quantities of adequate fire fighting equipment and trained personnel can furnish great protection.* To reduce this form of damage it will be necessary to have fire fighting equipment and personnel so located that a major proportion will not be wiped out by the detonation. Accounts from Hiroshima and Nagasaki point out the inadequacy of Japanese fire fighting equipment and procedures. In both cities, about *90 per cent of the equipment and personnel for these duties were wiped out immediately.* Major efforts should be directed to reducing the possibility of flame burns, not only because they produce a large number of casualties, but also because these casualties need so many trained persons and so much equipment for treatment and hospitalization.

Nagasaki After Atomic Bomb Attack

In this area, right in the center of where the bomb hit, everything has been flattened, and only masses of debris tell of the buildings which formerly stood there.

Nuclear Radiation

The use of nuclear radiation in warfare presents new problems for both the military and the civil population. These effects are not only important but complex, as they may be caused by external and internal radiations and may be immediate or delayed. For all nuclear radiation effects, distance is by far the best protection. Immediate radiation effects are produced in a matter of a few thousandths of a second after detonation. With the atomic bomb, about 99 per cent of the nuclear radiation produced comes out in the first fraction of a second after the detonation. It con-

Hiroshima Had the First Taste of Atomic Warfare
View of area near Hiroshima's post office, made shortly after the first atomic bomb attack in history. Few structures remained upright, and even these were gutted by fire.

sists of penetrating radiations that come from outside the body and therefore constitute an external hazard.

Large quantities of gamma rays are produced almost immediately by the detonation and radiate in all directions. These rays travel in a straight line as does light. They are highly penetrating, and it takes a large amount of material to absorb and stop them. It is important to realize the directional and shadow producing characteristics of this radiation. One does not need shielding on all sides but merely on the side of the detonation. In shielding against gamma radiation the important thing is the weight of the material that is between the body and the source. The chemical characteristics of the shield are of no importance. Lead is often used in laboratories where gamma radiation or x-radiation occurs. This is a suitable substance because it occupies a very small volume in comparison to its weight. The effectiveness of a shield is most often described by means of thickness of the material that is necessary to reduce the intensity to half the initial amount. This is called the half-thickness of that material. The approximate half-thickness of common construction materials are 1 inch for steel, 3 inches for concrete and 4 inches for wood or earth.

Neutrons also constitute an external hazard at the time of the detonation. They are not as effective at great distances as the gamma rays, but they require consideration because, being uncharged particles, they are difficult to stop and shield against. Shielding is not as simple as in the case of gamma radiation, because the weight of the shielding material is not the important factor. Instead, the important characteristic is the ability of the particular element or compound to slow down and then capture neutrons. The neutrons that occur in the detonation of an atomic bomb are essentially fast neutrons. Substances such as cadmium and boron capture slow neutrons to an amazing degree; but, since these neutrons are not slow, these substances are of little value in defense against the atomic bomb. The best substances are those with low atomic weights. Hydrogen, the lightest of all substances, is the best; hence, in shielding against neutrons, the best substances for their weight are those containing large amounts of hydrogen, such as water or paraffin. The approximate half-thicknesses of common materials are between 3 inches and 12 inches for steel and about 6 inches for concrete, earth, wood, and water. Since neutrons, like gamma rays, travel in a straight line from the point of detonation, radiating in all directions, the shielding need be only between the person and the source.

Delayed Radiation

About 1 per cent of the nuclear radiation produced by an atomic bomb is not produced immediately, but comes from the decay of the fission products. In an air burst, where the fireball and mushroom cloud containing the fission products go up in the air to be dispersed by the wind, this delayed radiation is negligible. In an underwater burst, or possibly a surface land burst, a base surge will probably occur. This cloud, moving close to the ground, contains a large proportion of the fission products. As this cloud sweeps out over ships or cities, it surrounds buildings, people, and equipment. The radiating material is then extremely close to a person. The relatively small amount of radiation that is left after the detonation is greatly enhanced because of its proximity. This base surge, in comparison to the mushroom cloud after the air burst, produces radiation intensities on the ground that are higher by many thousandfold. This is due solely to the fact that the base surge can surround individuals on the ground. When it is realized that at Bikini this base surge moved over an area of about 5 sq. mi., this is seen to be a very real hazard. It takes time for this cloud to move, and, as the radiation from it is only of importance when it surrounds the point in consideration, there is available a varying amount of time in which to get out of the way or to dodge the cloud. This base surge moves with varying speeds. Initially it spreads out at about 50 m.p.h. Its speed constantly decreases until it is dispelled. For this cloud to spread over its maximum area requires several minutes. If one is in a city, great protection will be afforded if one gets down into a basement or sub-basement, or into an air raid shelter. It is of importance also to note that this radiation from the base surge is nondirectional, as it comes from all points in the cloud. Hence, any shield that is devised must be on all sides, including the top, of the location considered.

The shielding requirements are similar to those in the previous situation, in that the same half-thicknesses are applicable. There are no delayed neutrons of significance; hence, special shielding is of no importance in this problem. In the delayed situation we also have important beta radiation. Immediate beta radiation occurs but does not travel a very great distance from the source, because of the efficient shielding furnished by air. Where the base surge is surrounding the location in question,

The Force That Wiped Out a City
In this street in Nagasaki, charred bodies are scattered amidst the debris and wreckage of shattered buildings, flattened by the force of the atomic bomb. The divisions between streets and sidewalks are not even discernible. Photo was secured from civilian sources in Japan.

beta radiation is important, because the half-thickness of air is about 4 yd. Normal clothing furnishes sufficient shielding to beta radiation. Similarly, thin walls and the glass in windows are adequate. It is, of course, nondirectional and comes from all sides. The extent of the external hazard furnished by beta radiation is not well understood. It is believed comparable to that of gamma radiation when a base surge has been created. Alpha radiation occurs from the nonfissioned plutonium and uranium. This radiation constitutes no external hazard, as the skin furnishes adequate shielding. All the alpha rays are absorbed in the epidermis with no resulting damage to living tissues.

Internal Radiation

Internal radiation gets into the body through inhalation, ingestion, or injection. This is a delayed hazard and is possible only where one is in the base surge, the mushroom cloud, or an area over which the base surge has previously passed. The internal hazard generally occurs only where there is also an external hazard. If one is exposed to the base surge or is in the mushroom cloud, the external radiation is often lethal without any consideration of an internal hazard. Particularly if one is working in a highly contaminated area after the detonation, there is a significant, but not necessarily lethal, degree of internal hazard. This is created by disturbing the dust and usually enters the body through inhalation. An additional hazard exists from eating with contaminated hands and thus getting the active material into the body through the mouth.

In the case of an atomic explosion, a small amount of this radioactive material is in the form of a true gas or vapor. Almost all of it exists on particles of dust or droplets of water. The filter in a modern gas mask is believed to give adequate protection. This filter is extremely efficient. It is quite possible that new masks will be devised that will protect against atomic, biologic, and chemical warfare. Such a development is highly desirable. Protective clothing would be required for workers entering contaminated areas. It would probably be permeable clothing. Its main requirement is that it should be disposable. Its functions would be to keep contaminated material from the skin and possible later entry into the body. Disposability is desirable, as these materials cannot be rendered harmless by any physical or chemical means.

Collective protectors with filters or inclosed air-conditioning systems are probably indicated for vital installations and underground shelters in anticipation of atomic warfare. Such items would prevent the highly contaminated air of the base surge from entering installations that otherwise would furnish adequate protection against the effects of the atomic bomb. The development of decontamination techniques and facilities is indicated to reduce the long-term possibility of personnel becoming contaminated and later having active material enter the body through the respiratory and digestive tracts. Such techniques will probably consist of washing away, carrying away, or burying the active material.

Education

In an attack on a modern city it is believed that about 50,000 deaths would result from a single bomb. It is felt that, if the individual civilian and soldier in such a city were adequately trained as to what he could do for himself after the detonation occurs, perhaps 10,000 lives could be saved. The development of atomic defense for the individual will be the subject of much work in the future. The education of large numbers of persons, both civilian and military, for special jobs in atomic warfare is important and will probably be given to such people as radiologic safety personnel, medical officers, civilian doctors, and civil defense technicians. The method by which the individual indoctrination and the specialized training is given will determine to a large extent the psychological preparation that will be attained in a population. It is highly desirable that we impart the proper degree of knowledge to all so that each individual has a respect for the special hazards of atomic warfare, thereby avoiding the undesirable extremes of excessive fear or ignorance. This will be a difficult job and the Nation is far from attaining this goal at present.

A large amount of detailed defense planning will be required for the protection of the Nation. It will include large-scale training of such specialists as fire fighters, evacuation control personnel, first aid personnel, and decontamination groups. Large stock piles of food supplies, medical supplies, and disaster equipment will be required in relatively invulnerable locations. Preparations will be required for mutual aid between cities and major installations. All civil and military groups must be equipped and trained in the detection and isolation of contaminated areas. This new hazard created by nuclear radiation is the one hazard that may not be detected by any of the physical senses. It requires special instruments and special consideration. With sufficient indoctrination and a few minutes warning of an attack, it is quite possible that a 50 per cent saving in casualties can be effected. This establishes the fact that development of advance detection techniques and warning signals is of the greatest importance to insure the continuation of our present existence.

How Bomb Effects Are Produced

Lieutenant-Colonel David B. Parker, of the Manhattan Project, War and Navy Departments Armed Forces Special Weapons Project, pointed out in an address before the International Association of Fire Chiefs, in New York in August of last year that the atomic bomb causes damage to buildings in three ways. First, the ordinary high pressure blast wave, which knocks the building down and blows windows, shatters foundations, pillars and columns, blows roofs in and flattens the whole building;

Secondly, primary fires. The heated radiations are so intense that readily ignitable material is ignited at the instant of explosion;

Third, probably the greatest cause of damage are the secondary fires which are caused when buildings collapse, wire circuits are shorted, roofs fall in and heating equipment gets out of control.

In discussion the atomic bomb attacks on Japan, Colonel Parker said: "In the case of the Japanese attacks, we purposely exploded the bombs high in the air in order to minimize radiation effects, for humane or any other reason you may like to choose. One of the reasons we burst them so high in the air was to avoid delayed radioactivity. Of course, I'd better add also the altitude we selected worked out very well from the physicist's angle to cause the maximum blast damage. If we had set bombs off on the ground, put contact fuses on them, so that they did not explode until they hit the ground, these dangerous fission products would have been exploded around the scene of the explosion in a very efficient manner and the radio activity would have become the major factor in injuring people though it

(*Continued on page* 718)

Hiroshima, Two Years After

Two years after the first atomic bomb used in warfare was dropped on Hiroshima, the city is being rebuilt slowly. Some evidences of the terrific blast that shook the 343,000 population have been removed.

25% of Present Apparatus Needs Immediate Replacement

And 10% Additional is Needed to Protect New-Growth Areas of Cities; Results of Comprehensive Survey

IN ORDER to determine the mechanical condition of post-war fire departments, and to determine as well the course to be taken by the fire service in maintaining fire departments at a safe strength, in view of the inevitable shortages that are developing in critical materials due to diversion for European relief and National defense measures, FIRE ENGINEERING recently made an extensive survey. This survey covered all municipalities in the country of 1,000 population and over.

The questionnaire employed is reproduced below:

QUESTIONNAIRE

City..... State.....

Pumpers:

1. Number.....
2. Age of units:
   No. .... Age (or year purchased)
3. Capacity:
   Gals. Per Min. .....
   Number of Units .....
4. Number needing replacement ....
5. Number of additional units needed .....

Triple Combinations

(Pump, booster or chemical tank, hose)

1. Number.....
2. Age of units:
   No. .... Age (or year purchased)
3. Capacity:
   Gals. Per Min. .....
4. Number needing replacement ....
5. Number of additional units needed .....

Quadruple Combinations

(Pump, booster or chemical tank, hose and ladder equipment similar to city service truck)

1. Number.....
2. Age of units:
   No. .... Age (or year purchased)
3. Capacity:
   Gals. Per Min. .....
   Number of Units .....
4. Number needing replacement ....
5. Number of additional units needed .....

Hose Wagons

1. Number.....
2. Age of units:
   No. .... Age (or year purchased)
3. Number needing replacement ....
4. Number of additional units required .....

Aerial Ladder Trucks

1. Number.....
2. Age of units:
   No. .... Age (or year purchased)
3. Number needing replacement ....
4. Number of additional ones required .....

City Service Trucks

1. Number.....
2. Age of units:
   No. .... Age (or year purchased) .....
3. Number needing replacement ....
4. Number of additional ones required .....

Rescue Trucks

Number .....

Ambulances

Number .....

Other Motor Apparatus not Listed Above

1. Number .....
2. Age .....

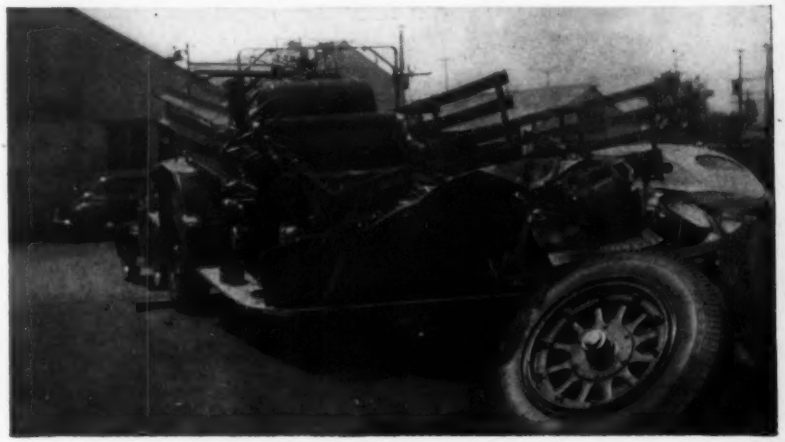


Photo Courtesy Glen Alton

A 24-Year-Old Pumper Collided with a Truck Load of Scrap Iron in Los Angeles County Recently, Demolishing the Apparatus and Injuring Three Men. Ancient Relics of This Kind, Fitted with Two-Wheel Brakes, Create a Real Traffic Hazard.

During August, the National Board of Fire Underwriters Started Tests on Philadelphia's Fire Apparatus. The First Two Engines Tested, Both of Ancient Make, Wouldn't Work. Here a 24-Year-Old Pumper Has to Be Rolled Manually to Get the Motor Started. Fire Departments Have Too Many Obsolete Machines in Service, as Shown by the Accompanying Survey.

Thirty-four Per Cent. Return

Replies were received from 1,601 fire departments, representing a total population (1940 census) of 38,517,980 as compared to a population of 112,412,614 for all cities and towns in the United States over 1,000 population. Thus the survey represents a return of a trifle over 34 per cent on the basis of population.

Fire Department Repair Shops Must Work at Top Capacity to Keep Obsolete Apparatus Rolling.

However, in prorating the returns over the total population of United States (in communities of 1,000 and more), cities were treated in three separate groups, namely, those of 20,000 and over; those of 5,000 to 20,000 and those from 1,000 to 5,000 population.

Total population in these three groups represented by the returned questionnaires were:

Over 20,000 population	31,005,852
5,000 to 20,000 population	5,603,893
1,000 to 5,000 population	1,908,145

The population for all cities in the United States in each of the three groups are, by the same census (1940), as follows:

Over 20,000 population	92,900,326
5,000 to 20,000 population	7,803,560
1,000 to 5,000 population	11,412,614

From the two tables above, the relationship between the populations covered by returned questionnaires and total populations of all municipalities in each population group are established.

To prorate apparatus figures reported for the 20,000 population and over group, the factor 3 was employed (92,900,326 divided by 31,005,852).

To prorate apparatus figures reported for the 5,000-20,000 population group, the factor 1.4 was employed (7,803,560 divided by 5,603,983).

To prorate apparatus figures reported for the 1,000-5,000 population group, the factor 6.1 was employed (11,708,728 divided by 1,908,145).

Dividing the cities reporting into three population groups before prorating, and using three different prorating factors, gives a more accurate result than employing a single ratio between the total population of cities reporting and the total population of all cities in the United States over 1,000.

Possible Discrepancies

Certain factors may have contributed to discrepancies in the final survey figures, but none of them is believed to have introduced serious error.

First, a number of those reporting failed to classify their apparatus properly in the questionnaires. Some listed as "pumpers" apparatus which should have been included under "triple combinations."

Others listed as "triple combinations," pumpers. Still others included "triple combinations" as "quadruple combinations," and so on.

Some specified that city service truck replacement should be by junior aerials, but the majority made no such comment. Without doubt this plan will be followed on a far larger scale than indicated by the summary, for this particular question on the type of unit to be used as replacement was not included in the questionnaire. The total number of aerials needed, as reported, may therefore be low.

With reference to squad trucks, many of these units are provided with pumps, booster tanks and hose, and some might have been included under "triple combinations." The inclusion of all under the listing "squad trucks" may thereby have diverted an appreciable number from the listing "triple combinations," where they belonged.

Because of the fewness of quintuple combinations listed in the returns, this classification has been combined with "aerial ladders."

Capacities of units needed for replacement of, or addition to, present apparatus are not given, as too few gave such figures to make possible the striking of accurate averages in the various capacity groupings.

The tabulation does not include apparatus in towns of under 1,000 population of which there are a huge number, nor does it include county units, forestry units, industrial or institutional units.

The thanks of the editorial staff of FIRE ENGINEERING is hereby extended to those Fire Chiefs and other fire department officers whose willing cooperation made this work available to the fire service. Without their generous help, this survey would have been impossible.

Total Number of Pieces of Fire Apparatus in Service in Municipal Fire Departments in All U. S. Cities of Over 1,000 Population

Pumpers	6,262
Triple Combinations	15,776
Quadruple Combinations	662
Aerial Trucks	2,169
City Service Trucks	1,299
Hose Wagons	1,822
	27,991

Average Age of Units in Service

Pumpers	15.2 years
Triple Combinations	13.5 years
Quadruple Combinations	10.8 years
Aerial Trucks	13.2 years
City Service Trucks	19.3 years

Number of Pumpers and Triple Combinations, of the Most Popular Sizes, at Present in Service in U. S. Cities of Over 1,000 Population

Cap. in G.P.M.	No. in Service
1,000	2,778
750	6,399
600	974
500	5,703
350	673
Total	16,527

Other Types of Automotive Equipment in Service

Rescue Trucks	770
Ambulances	717
Pick-Up Trucks	252
H. P. Fog Units	129
Squad Cars	297
Trailer Pumps	174
Grass and Brush Fire Trucks	102
Tank Trucks	165
Lighting Trucks	114
Foam Trucks	24
Chemical Trucks (Chem. Engines)	45
Chemical and Hose Trucks	15
Salvage Cars	30
Fire Alarm Trucks	78
Crash Trucks	3
Shop, Service and Repair Trucks	66
Miscellaneous (Type not Specified)	729

Percentage of Units, in Service, Falling into Different Age Classifications

	Less than 15 yrs. of age	Over 15 yrs. of age	Over 20 yrs of age
Pumpers	47%	53%	6.8%
Triple Combinations	56.6%	43.4%	30.8%
Quadruple Combinations	66.8%	32.2%	13.7%
Aerial Trucks	56%	44%	29.2%
City Service Trucks	26%	74%	59.6%

Number of New Units Needed

	For Replacement	Additional	Total
Pumpers	1,687	388	2,075
Triple Combinations	3,475	1,517	4,992
Quadruple Combinations	181	143	323
Aerial Trucks	524	434	958
City Service Trucks	550	149	699
Hose Wagons	489	76	565
			9,612

Chief Slattery Injured in Rochester Hotel Fire

Fire Chief John A. Slattery was one of several firemen injured in fighting a fire which swept the sixth floor of the eight-story Cadillac Hotel, Rochester, N. Y., on August 19 last, causing an estimated $20,000 damage. Two hotel guests suffered from smoke poisoning.

The fire, starting shortly before 3:00 P.M. in a broom closet on the sixth floor next to room 600, quickly choked that floor and the two above it with heavy smoke. Of the approximately 200 guests, about 100 were in the structure when fire was discovered; all were led to safety by firemen and hotel employees. Those above the fire for the

(*Continued on page 718*)

Evaluating Industrial Plant Fire Hazards

By WALTER W. STEPHEN*

IT IS sometimes the case that a fire officer is called upon to make a survey of the fire hazards that are present in an industrial plant to a degree of completeness somewhat beyond that of a regular or routine inspection.

In such cases it is often true that he has been requested to do this by the management, who have a genuine regard for his opinion and will make an earnest and reasonable effort to remedy the hazardous conditions that he points out. In other instances this survey may be instigated by municipal authorities because recent experience has indicated the need for it.

At this Chemical Plant Fire in Chicago, Cans of Lacquer Exploded Like Artillery Shell Fire. Inspection of Industrial Plant Fire Hazards Should Include Special Note on Such Contents.

In either case, the finding of conditions that may cause or aid the spread of fires is an object as much as becoming familiar with the place so that a fire in it may be better and more effectively fought.

The following is a possible outline that may be followed in making such a survey. It is by no means the best one that is possible, and it is not one taken from books. Every item noted is one that the writer has seen cause a fire or making the fighting of one a more difficult task. It is, however, one that will cover most of what is to be found and it should acquaint the user of it with what it is possible to expect in moments of extreme emergency. There has been an earnest effort to use simple and nontechnical language in it. What it is necessary to find out may be classified under seven headings:

1. Plant layout.
2. Processes and equipment.
3. Buildings.
4. Water supply.
5. Fire alarm system.
6. Fire fighting provisions.
7. Conflagration hazards.

These may be subdivided as follows:

1. Plant layout: A fire officer should be interested in this because it includes what he should know so that he may get his apparatus and men into a plant and to the seat of a fire and, what may be of great importance, get them out again.

A reasonable familiarity with arrangement of plant is necessary, including acquaintance with names and locations of manufacturing areas, streets, buildings, and what is being done in areas and buildings. Much of this may be obtained, before a survey, by a study of plant maps, especially the kind that are made and kept on file by the engineers of rate making and insurance carrying firms.

Are streets, lanes and alleys wide enough and situated so that apparatus may reach all areas where fires may occur? Can pumpers and trucks turn around, and can they get to hydrants or cisterns from which water must be obtained? Especially, note places from which there is only one way out.

Are there overhead wires that may interfere with operations and where are they? Also, are there overhead high tension lines present that may present a hazard of contact with fire streams? Where are electrical cut-offs?

Should all first-due companies enter plant at one entrance, or should they report to different entrances upon answering a first alarm? In some case, it is better strategy for the last due engine company to lay a hose line from a hydrant situated in an adjoining industrial plant if the other first due companies are enough to use all available hydrants. I have seen this done to advantage several times.

Where you are and what is around you is something that you should and must know, and the only way to obtain this familiarity is previous fire experience in that plant or visits to it before you have to go there on a call.

2. Processes and equipment: You should know something about materials that are to be encountered in a plant, raw, in process and as products. Note

Presence of High Voltage Electrical Lines and Equipment Should Be Noted. This Information Will Prove Valuable in the Event of Such a Fire as the One Illustrated Above.

*Chief of Fire Department, Monsanto Chemical Co., Anniston, Ala.

whether they are inert, combustible, flammable, volatile or explosive. Note if there may be flammable or explosive vapors or fumes or hazard of dust explosion. If the latter, your plan of fighting a fire should include the use of fog streams that will not stir up dust as solid streams do.

Also your knowledge of material present will enable you to plan ahead whether its extinguishment may require special methods.

Note space between exposures containing storage. In the case that tanks of flammable liquids are involved, note if they are isolated, if they are vented, if they have dikes around them, and other items that will determine how close your men may work around them and if your force may be subject to the hazard of improperly vented tanks blowing up from internal pressure; and what areas may be involved if a tank is ruptured or fails.

In the event that crude oil tanks are involved, have your mind made up ahead of time how far you are going to let the burning oil level get down in them before you get your men and equipment out of the way of a boil-over, which is very likely to happen when the fire gets down to a certain point in them. I have seen the fire from a large crude oil tank boil-over go up two thousand feet into the air and spill several hundred feet on each side of it. Also, I have seen immense benzol tanks that were so large that it took days for fire to consume their contents.

If storage or handling of flammable gases is involved, note possible exposure to tanks or holders and what may be done to protect them; also how they are vented, and if flammable gases that are heavier than air are held in storage; note how holders are vented and possible flash-back.

Also note what other gases may be involved that are not flammable, but may injure your men or drive them away, and what equipment may be necessary to protect your forces if these are encountered.

Note if housekeeping in plant is good or bad, if it may contribute toward the origin of a fire or make its fighting difficult. Aisles and passageways should be kept clear, and material that may cause spontaneous ignition under certain circumstances should be kept in proper and safe surroundings.

Note if metals such as magnesium are present that may present hazard of combustion and consequent explosion if it becomes molten and gets into water.

In going through a plant, an official of this organization who is a technical man should go with you to supply desired information regarding hazardous phases of processses and equipment.

In some cases, where secret manufacturing processes are going on, it is not necessary for you to know exactly what is being done, provided you have full information regarding the properties and hazards of everything that is present, also exactly where you may find it.

You are entitled to, and should be, informed regarding any and every piece of equipment, including autoclaves, stills, etc., if there is a hazard that these may blow up or fail while you and your men are fighting a fire around them, and if they are automatically protected against this by release devices.

3. Buildings: Note general construction, if frame, ordinary brick and joist, "mill timber" or fire resisting, also situation and exposures.

Note floors, if fire resisting or otherwise, fire cut-offs between floors, enclosure of stairs, shafts and other vertical openings.

Note walls, if frame, concrete, metal lath and stucco, tile or brick; also note wall openings, fire doors (if properly cleared and maintained), other doors, windows (if wired glass, or with fire shutters) and exposures through windows.

Note roofs, if frame, tile, concrete slab, metal, metal with asphalt cover. Note ceiling and roof openings (be sure you know how to get into the loft of every building), skylights and how you may most easily vent buildings through these. Note basements, if any, how you may get into them, and if there are concealed open vertical openings through which fire may go up from them (partitions, hollow spaces around elevator shafts, etc.).

Note heating facilities in buildings, flues, if woodwork or other material is subjected to hazard from stoves, furnaces, heaters, stove pipes or hot air ducts, and if heating or ventilating or air conditioning ducts may spread fire or smoke through a building.

Any combustible surface that is warm from exposure should have the source of this removed or should be protected by metal or asbestos shielding with a sufficient air space under it. I have seen an ordinary stovepipe two feet from a plaster wall, upon which there was an asbestos shield (with no air space behind it) set fire to the laths behind the plaster, inside the wall. An air space between the plaster wall and the asbestos would have securely protected it.

Note gas connections in buildings, where cut-offs are located, and if wrenches are available to close them.

4. Water supply: You should know, in any plant or area of one, if there will be present and available a supply of water that may furnish the number of fire streams that it is reasonable to assume may be needed to fight any fire there. Be sure you know how many streams you can use without so robbing any sprinkler systems that may be in buildings that they may not have enough water. There have been serious losses during the past in fine and modern industrial plants because both hose lines and sprinklers required more water than there was to be had and neither was effective, whereas either one might have controlled the fire. The engineering department in any plant, or the firms that carry their insurance, should have on file the results of flow tests that have been made by representatives of the Underwriters, or of insurance companies, that will show how much water may be available, and at what working pressures.

Note tanks, reservoirs, nearby streams, bays or other bodies of water from which pumpers may draft water, or if lines may be laid from adjoining plants. You should know where the valves on the mains of a plant water system are located, and if there are available records of inspections showing that they are kept open.

It is necessary that you know the sizes of plant water mains, as well as flow tests, to determine the number and locations of hydrants from which hose lines may be laid and operated.

If there are sprinkler systems, note where the control valves and fire department steamer connections on these are located. In some buildings, which should be determined beforehand, it may be the best plan to lay the second hose line to a sprinkler "steamer" connection.

5. Fire alarm system. Note if there is any fire alarm system in the plant, if it is a central office-supervised one, if it is actuated by operation of sprinkler systems as well as striking boxes.

Note where fire alarm central register is located, if there is one. In some plants there is a register board that shows the locations of sprinkler alarms. Frequently these alarm registers are in the plant guard office near the main en-

Inspection of Industrial Plant Should Include Condition of Extinguishers.

trance. At any rate, you should know where to go at once to get information regarding the fire, for it may and can happen that no one may meet you at the plant entrance, or they may be too ill-informed or too excited to tell you what you want to know.

Note where alarm box, phone or other means of sending in a second alarm, if necessary, is located.

Know Where Sprinkler Control Valves Are Located; Also Location of Main Water Supply Valves.

6. Fire Fighting Provisions. Note what apparatus is available in the plant and the organization for operating it.

One of the most important details is that there should be an officer of the plant fire department or some one else with authority and knowledge of the plant on every shift that can give you a preliminary size-up of the fire, what is being done, and what materials and manufacturing equipment units are involved, and what hazards are to be encountered. You should, however, be already informed about what is in any given location, from previous inspections, and should not be in the position of a stranger, for a fire officer in a strange plant has two strikes on him at the start.

You should by all means know beforehand if the fire hose in any plant, on the shelves of hose houses or on reels or even on motor equipment, is kept in good condition so that you may rely upon it. There are many plants where it is the best and safest plan to utterly disregard any hose that may be present in them because it will break if it is used. On the other hand, there are many manufacturing organizations where the hose and other equipment may be as good as your own. The thing is to know which is true at two o'clock in the morning.

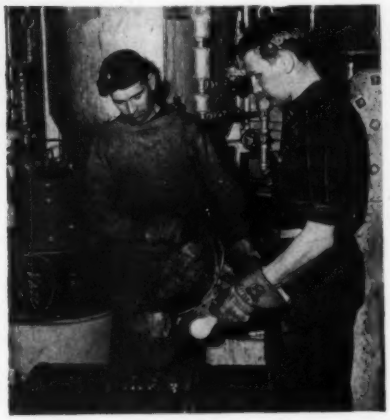
In some plants there may be special equipment for fighting fire that you do not have, such as foam generators and powder in large quantities, foam play pipes and foam liquid, etc.

In inspecting the fire equipment in a plant for the purpose of making a report on its condition, note if motor driven apparatus is kept in good and warm buildings, if records are kept of its supervision and maintenance, if 2½ and 1½-inch hose is kept clean and in good order, when and how often it is being tested under pressure, if it is shifted on hose carriers, shelves, reels, etc., often enough, if there are facilities for washing and drying it, if play pipes and nozzles are in good order and properly kept, including controlling nozzles, fog nozzles, etc. They should be clean and without dents and movable, adjustable parts should work easily.

Also check axes, ladders, hooks, hose straps, and other minor equipment.

If your survey is intended to include fire extinguishers, note tags on them and dates of recharging, or even have them opened and small amounts of the solutions put together to be sure that they react properly. All foam and soda-acid extinguishers should have their shells tested once a year under high pressure by a hydraulic pressure testing pump, and records kept of this.

If there is foam apparatus available, note how much foam powder or foam liquid there is. There should be enough to operate each generator or play pipe for an hour, at least.



Knowledge of Inflammable and Explosive Materials Employed in a Plant Is Essential. Incidentally, this Picture Shows a Dangerous Way of Handling Inflammable Solvent.

The officers of a city fire department should also know where additional supplies of foam making material may be had or borrowed. In many communities the larger industrial plants have a mutual aid system whereby such materials may be available from a number of plants in the case of a very large fire in one of them.

Carbon dioxide extinguishers should have records on them of when they have been weighed. An absolutely thorough survey will include weighing these extinguishers, which may be more easily done if there is a set of portable bathroom scales to be had.

It is very important that municipal and industrial departments should be accustomed to working with each other, which may be accomplished by having the first due company at least, at every plant, go through with the plant brigade, some of their practice drills. I have seen the carrying out of this plan, more than once, be the reason why a serious fire was quickly stopped.

In addition to this, municipal fire officers may, in many instances, aid in training plant fire fighting forces, and the plant and brigade officials will appreciate and take advantage of this assistance.

7. Conflagration hazard: With the knowledge that has been obtained from surveying a number of industrial plants, it is possible to foresee, to some extent, whether there is likely to be a conflagration that may involve all of some plant or many at one time.

Are there large concentrations of frame or other combustible buildings; is it possible for burning liquid material to escape from any area and flow through and over others? Can exploding drums be thrown through the air far enough to threaten adjoining locations, etc?

All information of this sort is useful to your own department, and to any and all others with whom you are associated in a mutual aid plan.

In conclusion the writer wishes to apologize for mentioning personal observations, and for making so many statements regarding elementary things and facts which any and every one knows. It is, however, truly the case that the correct operation of a fire fighting force depends upon remembering and observing and doing very many simple and elementary things.

Night Fire Patrols in Sydney

For better supervision of high risks and quick attack on outbreaks of fire, Sydney, New South Wales, Australia, is to have seven sunset-to-dawn fire patrols operating in specially designed appliances equipped with two-way radio, and in constant contact with the control room at headquarters. Sydney, with the second largest population in the British Commonwealth, is in a fire district that embraces 54 municipalities and shires within its area of 302 sq. miles.

Each of the seven special appliances will have a crew of an officer and four men, chosen from various stations in the district and relieved during the night. Each crew, or patrol, will work to timetable, except, of course, when attending an outbreak. If a patrol sees a fire, it will notify the control room by radio and immediately attack. On the other hand, if the control room is notified of an outbreak, it will order the nearest patrol appliance to the scene, and support it with other appliances.

This fire patrol principle is part of the reorganization of fire protection in the Sydney fire district with its 76 fire stations. Many of these are now redundant and, already, 23 have been closed. Motor traction, vastly improved road conditions and speedier transmission of alarms are being followed by the replacement of stations of horsedrawn days by strategically chosen stations. Another factor is legislation that has reduced the hours of duty for all grades in the New South Wales Fire Brigades to 56 a week.

In the opinion of the board, and its principal officers, the patrol scheme offers quicker initial response to alarms, and enables personnel engaged in the work to acquire a knowledge of risks outside the areas served by the station to which they are attached, and, also, of the topography of other areas.—FIRE, May, 1948, issue.

Pacific Underwriters Move Office

The office of the Fire Underwriters Association of the Pacific is moving from its present location at 818 Merchants Exchange Building, San Francisco, Calif. After June 21, 1948, its address will be 215 Battery Street, San Francisco 11, California.

Television—Blessing or Bane to the Fire Service

Either Way, Nation's Fastest Growing Industry Presents Fire Service With New Problems

A FIRE ENGINEERING SPECIAL REPORT

Editor's Note: **Does television, electronic giant of the times, offer new or special fire hazards? Does this new product and new industry portend new headaches for the fire service?**

If you believe the radio industry, the answer is "no." Television, they insist, is safer than good old-fashioned radio. If you accept the judgment of fire officers who have come to grips with this electronic wonder on the fire ground, you'll want to know more about video, and all it means as friend or foe of firemen.

Thus far, little has been written about television from the fire fighter's standpoint. As a forerunner to the televison bibliography to be, FIRE ENGINEERING **is pleased to submit this study, with accounts of actual fires involving television receivers and studios.**

In so doing grateful acknowledgment is made to Fire Chiefs Stackpole of Lowell, and Benjamin E. Chase of Haverhill, Mass. Lieutenant Rowell C. Currier, Haverhill Superintendent of Fire Alarm and Mr. Ralph Anderson, radio expert, for data on actual fires, to the National Board of Fire Underwriters, Mr. George Booth, general manager, and the Underwriters Laboratories, New York, Mr. K. S. Geiges, associate electrical engineer; to the Television Broadcasters Association, DuMont Laboratories and Mr. O. H. Caldwell, editor "Electronic Industries."

NEWEST and fastest growing giant in American industry is television. Just what this newcomer in the electronic field will mean to the fire service can only be conjectured, at this writing. That it will have a double influence, however, appears feasible. The first is in education and instruction within the fire service itself; the second is its value as a medium for interpreting the fire service, and its work, to the public.

A year ago there were an estimated 17,000 television sets in the country. In August last, there were more than half a million; of these, 278,896 were produced in the first half of 1948. Production in 1949 should total around 1,600,000 receivers, it is predicted by authorities. By the end of 1948 there should be more than 850,000 receivers and over sixty television broadcasting stations in operation. It is further prophesied that by 1952 there should be 13,570,000 sets in operation.

In the last six months the Federal Communications Commission has experienced a flood of applications for permission to construct and operate commercial television stations. A recent check (Sept. 1948) showed 299 applications pending, almost all filed since January 1, 1948. At present there are only thirty stations operating on the air, seven licensed and twenty-three operating on "special temporary authority." In addition, 104 construction permits for stations have been authorized.*

The mushroom growth of television has everybody concerned: manufacturers who have difficulty getting materials; service organizations, unable to get experienced personnel; the FCC, which has allocated seven channels for television and is trying to find many times that number (some television and FM interests have appealed for some of the radio channels presently allocated the emergency services, including fire); broadcasters, who are testing new studio and field techniques.

The Fire Hazard

There is at present considerable difference of opinion over television as a fire hazard. Within the radio industry it is contended that video (television) is no more of a hazard than conventional radio sets. O. H. Caldwell, Editor, Electronics Industries and a nationally known electronic authority, says "I have been inquiring among television repair men and have not been able to get any report of a television set setting fire to anything (of course, sometimes a resister burns out inside the set, putting it out of commission, but that's all)." His belief was shared by engineers of DuMont and other television companies and the broadcasters' association.

Within the fire services and insurance circles there is more doubt inspired, evidently by reports of a number of fires, accidents and lightning episodes involving radio installations.

Interest of the fire service was first directed to the hazards of television early in 1947 when antennas first began to sprout upward from rooftops in increasing numbers. Most fire officers are not technically radio-wise but they are perfectly conscious of the possibilities for trouble when metal conductors are projected above structures. They have also had to run the gauntlet of wire aerials of every kind in operating on roof tops—particularly of multiple occupancies. With knowledge of the accidents resulting from this latter kind of antenna installation, they were naturally concerned over just how much video was going to add to their woes.

About Television Antennas

At this point a word or two about television aerials might not be amiss. According to K. S. Geiges, electrical engineer with the Underwriters' Laboratories, back in the 1920's when radio broadcasting first became popular, the hazards of outdoor receiving antennas had the attention of authorities, including fire protection engineers, who were guided by the installation requirements of the National Electrical Code. As radio developed, and the number of transmitting stations increased, more powerful transmitters were employed and more sensitive receiving equipment was developed, until at present time the indoor receiving antenna has largely replaced the outdoor type for conventional radio.

With the advent of television, it has again been found necessary to locate the antenna outdoors for suitable reception. This is necessitated by the use of higher frequencies for these services. A characteristic of transmission at these higher frequencies is the limited range, which is only somewhat greater than the line-of-sight distance under normal conditions (line-of-sight is the distance the eye travels to the horizon). Another characteristic is the screening effect of intervening metal structures. For cases where the antenna is not within the line-of-sight of the transmitter, the obvious remedy for both effects is to get the antenna as high as possible.

*On Sept. 30, 1948, the FCC announced suspension temporarily of action on pending or prospective applications for television authorizations as a result of evidence presented at the Industry-Commission conference in Washington, Sept. 13-14. Serious questions were raised as to the merits of present or proposed allocations. Officials of the FCC said an engineering conference would be called "to consider and recommend any necessary or desirable revision of its television rules, regulations and standards, and possible channel allocations." Following the survey and report of the engineering conference, it is said "industry conferences will be arranged by the Commission for discussion of its findings and proposed revisions based thereon of its rules and allocations."

Whether or not this review of applications for video stations, and further radio channels, pressure for which is persistent in Washington, will result in re-opening the entire subject of allocations presently made the fire and other emergency services is problematical. It is certain however, that the fire service and related interests all vitally concerned in retaining the frequencies allocated by the Commission will have to reckon with this persistent pressure upon the FCC by commercial interests who plead for more channels, and do not care from whom they take them.

The results of this tendency can be seen in any community located in the fringe area of an existing television service center.

The antenna masts extend well above the roof line of supporting structures and vary in height from five to forty or more feet. As to whether this condition will continue when the number of transmitting stations is increased and higher powered transmitters are available, Mr. Geiges believes this is a matter of opinion. Some electronic engineers contend a large number of television installations will continue to require elevated outdoor antennas for suitable reception.

The hazards of the mast or elevated antenna, are basically the same regardless of the radio frequencies involved although it should be borne in mind, Mr. Geiges says, that the high frequency antenna uses a single mast, often erected on the building itself, with height a factor of performance. Any high metal structure being a likely target for lightning, with consequent danger of fire or lightning damage to the structure and to the electrical equipment as well, naturally concerns the fire protection engineer.

In the case of high masts, there is also the hazard of their being improperly anchored or supported so that they might fall in a windstorm or when weakened by a fire in their underpinning. Such fall or collapse might contact nearby overhead power wires to cause further hazards.

The other hazard, of the antenna previously mentioned, is its obstruction to fire fighting operations. If and when "master antennas" are installed on multiple occupancies, in place of the almost limitless individual television aerials now being permitted in some municipalities, this hazard will be reduced, if not eliminated.

Over a period of the past thirty years or more, provisions of the National Electrical Code affecting grounding of antennas have been revised as necessary to meeting changing conditions. The present Code covers receiving station antenna systems, but not television installations. It was obviously written for the conventional (AM) broadcasting type of installation. Revisions are now under consideration to further modify the requirements to include television antennas.

The Code requires radio lightning arresters designed to provide a ground path for static discharge and induced surge currents. Although the older designs of arresters are not suitable for FW and television antennas, there are new models available which are built for this purpose. It should be pointed out that the arrester is not intended to protect the building in the event of a direct lightning stroke to the antenna.

It is the opinion of some authorities that grounding of the mast itself is an essential of safe installation because the masts are generally of metal and extend well above the roof line of the building. However, there is a difference of opinion over the method of grounding and this question is under advisement at present. Some types of high-frequency (FM) antennas can be grounded at a point on the antenna itself without affecting the proper operation of the receiver. Consideration, said Mr. Geiges, is being given to the possibility of grounding both antenna and mast through a single grounding conductor.

It is reported that where lightning rods are used on a building, the installation of the antenna would affect the protection afforded by the rods. In such cases the mast is tied to the rod system by a grounding conductor of suitable size.

Television Antenna Agreements

One of the first cities to question the wisdom of permitting unlimited television antennas on apartment houses was New York. Following considerable controversy between apartment house tenants and their landlords, the Television Broadcasters Association, Inc., prepared a "model" form of Apartment House agreement designed to be signed jointly by landlord and tenant. This rather formidable looking document, covers nearly three legal size pages of solid text and embodies these essentials:

The landlord will permit the tenant to erect and install by the installer at the tenant's expense, on the roof or other suitable place, an outdoor television antenna, including lead-in cable, upon certain terms and conditions (which follow in abbreviated form)—

1. Before outdoor antenna can be installed, the landlord must have first approved in writing a sketch and specifications showing location, method of installation, etc. Landlord reserves the right to withhold installation.

2. If a suitable outdoor television antenna already has been erected and is available for use on the premises, the landlord has the right to insist that tenant's receiver and lead-in cable be

Figure 3

connected to the previously erected antenna installation.

3. Installer agrees to safe workmanlike installation, to be approved by the landlord and that the installations "satisfy the requirements of, and will not be in violation of, any applicable fire regulation or law, building code, safety law, regulation or ordinance issued under the authority of any federal, state or municipal government having jurisdiction over the premises, or any standard or requirement set by the National Board of Fire Underwriters, and tenant agrees to maintain the same at all times at his own expense." The landlord may require installer within one year from date of installation to procure certificates of the appropriate state or municipal agencies which ordinarily supply

Figure 1

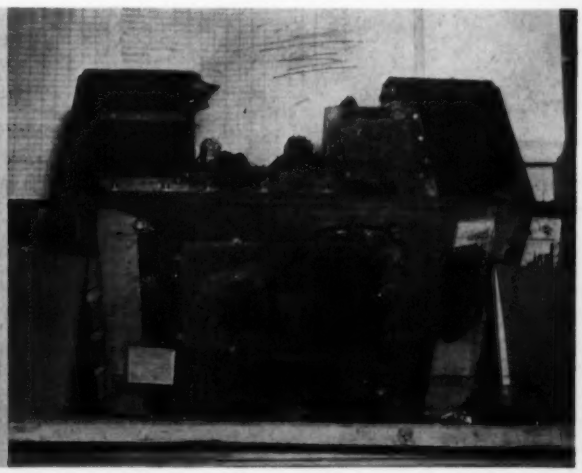


Figure 2

such certificates, certifying that the installation does not violate any fire, safety or building ordinance or regulation.

4. The installer will indemnify the landlord and tenant for and uphold them harmless from any and all liability resulting from property damage, personal injury, etc., caused by or resulting from the erection, installation and maintenance of the antenna installation. The installer must warrant "adequate experience" in installing television antennas.

5. Installer and tenant agree that the installation shall become the sole property of the landlord upon installation, to connect tenant's receiver so long as it is located at the apartment occupied by the tenant. If tenant's receiver is removed from his apartment continuously for seven months or more, exclusive of the time required for repairs, the tenant loses the right to connect a receiver to the outdoor antenna as if the tenant had vacated the premises.

6. The landlord will not be liable to maintain or repair the antenna or lead-in cable or other attachments.

7. Tenant must agree to permit other tenants on the premises to connect their receivers to his antenna as long as his own set's sound and vision is not impaired.

8. Agreement is off unless the tenant has commenced to install his receiver and to connect it to an outdoor antenna, as provided, within thirty days from date on which the tenant's television receiver is delivered to his apartment.

9. Tenant agrees to pay and to be liable jointly and severally with owners of other television receivers connected with his antenna for the cost of repairs and replacements made by them, and the work to be done by service agency approved by landlord.

10. Provides for penalties in the event the outdoor television antenna installation is not installed or made in a safe and workmanlike manner or if it violates the provisions of any applicable fire regulation or law, building code, etc. Landlord, on serving notice, may remove the installation. He may also refuse to permit further antennas to be installed on any tenant's installation until all regulations are complied with.

11. Provides that in the event the installation shall increase the insurance rate on the premises, the tenant shall reimburse the landlord accordingly. The same applies if any federal, state or local tax is imposed on the set or installation.

12. Tenant agrees that in the event an outdoor multiple television antenna system for the use of all tenants and such installation is a type approved by the Television Broadcasters Association Inc., the tenant will at his own expense, remove the outdoor antenna installation to which his receiver is connected. If he fails to do this within stated time, the landlord may remove it at the tenant's expense.

13. Landlord may add costs of doing work which the tenant failed to perform under the agreement, to the tenant's rent bill.

14. Failure of the tenant to live up to his obligations under the agreement and make payments as required shall constitute a breach of terms of the tenant's lease and permit landlord to institute remedies of "summary dispossess," etc.

15. Upon the tenant's removal from premises, or discontinuance of his outdoor installation, he will remove installation at his own expense, and through landlord's selected service agency. Landlord may permit installation to remain on premises if some other receiver is connected to it. If tenant fails to remove it, the landlord may do so at the tenant's expense.

16. Upon tenant's removal from premises or the installation's removal 30 days from date of discontinuance of antenna and landlord notified, all liabilities of tenant shall terminate, provided tenant has lived up to the terms of agreement.

17. No modification of the agreement shall be effective unless agreed to and signed by each of the parties.

18. Rights of parties to the agreement shall belong and inure to the successors and assigns of each and any of them, but the agreement shall not be assignable by tenant without prior written consent of landlord.

It will be noted that emphasis was placed upon adherence to federal, state and local laws and ordinances governing fire and other safety provisions. Many authorities believe that such an agreement is too stringent and will never be universally adopted.

A number of more simple regulations have been instituted by municipalities. The City of Hartford has published (June 15, 1948) "Requirements for Radio Receiving Antenna Work in Connection With Commercial, Industrial and Apartment House Installations." This document has only nine short paragraphs and appears to cover the details.

In smaller communities, the Town of Mamaroneck, N. Y.—which as a New York City suburb has a number of apartments, adopted brief regulations covering the question as follows:

"III—A Television Aerials or Antennas

The installation of aerials or antennae for television sets in the Town of Mamaroneck, N. Y., on multiple dwellings as defined in Article II of the Building Code of the Town of Mamaroneck, shall be subject to the following rules and regulations:

1. No aerial or antenna shall be less than ten (10) nor more than twenty (20) feet in height above the roof-line.

2. All such aerials or antennae shall be constructed of metal, or other material equivalent as to strength and fire resistance.

3. Where the installation of such aerials or antennae is on a flat type roof, no guy wires shall be used, but such aerials or antennae shall be carried on self-supporting brackets, or masts, supported only by metal brackets at the base thereof. Where space is available along a parapet wall, such aerial or antenna may be placed upon the parapet wall, or anchored to its side if the wall is approved by the inspector as sufficiently strong.

4. The supporting mast shall be permanently grounded by means of a copper conductor not smaller than #6 American Wire Guage.

5. All aerials or antennae shall be either permanently grounded or provided with a lightning arrester which shall be properly grounded and approved by the inspector.

6. Lead-in wires from such aerials or antennae shall not be installed so as to pass through dumbwaiter, elevator shafts or other interior shafts or enclosed passage-ways, except where lead-in wire or wires are in a metal shield or tube which is permanently grounded.

7. No aerial or antenna shall be installed without a permit to be issued by the inspector nor maintained without an inspection and certification evidencing compliance with these regulations.

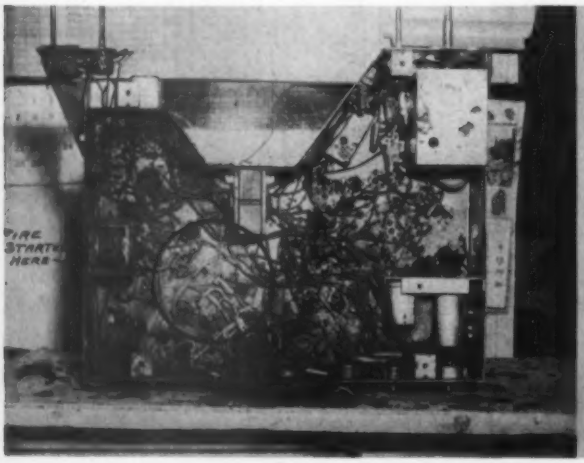


Figure 4

Figure 5

The National Board of Fire Underwriters and the Underwriters' Laboratories have both been active in checking the fire and other hazards of television. The National Board has not published standards embodying the fire hazard of television installations but radio installations are covered in Article 810 of the National Electrical Code; this article applies also to television equipment. The Electrical Department of the New York Office of the Underwriters' Laboratories (K. S. Geiges) has made a specific study of this problem and has issued **"Proposed Requirements for Television Receiving Appliances"** (Feb., 1948) together with the **"Underwriters' Standard for Radio Receiving Appliances"**—of which the first-named is a supplement.

According to the UL, the most serious hazard is the electrical shock hazard. Any radio operated from household current uses or generates voltages which, under certain conditions, may cause serious or fatal shock. Such accidents are not in fact peculiar to television or radio but can result from almost any electrical appliance. Television reception, however, requires the generation and use of voltages far higher than needed for conventional radios. Voltages up to 30,000 may be used in video equipment, although in the average video home receiver the voltage is probably only about one-third that figure, according to investigators.

Equipment presently being sold the public is for the most part equipped with interlocks on the access panel to prevent persons from coming in contact with a high voltage point while it is energized. At the same time, persons repairing or servicing equipment will have occasion to circumvent the interlocks, exposing themselves to the energized circuits. Therefore, only thoroughly qualified persons should undertake repair of video sets, authorities stress. Firemen and consumers should never tamper with the interlock when, for any reason, they want to poke around the inside of a set.

Fire hazard ranks next in importance to shock. Some fires, it is reported, have resulted from blocking off the avenues of ventilation of the set, as provided by the manufacturer or installer. One such incident is described in the following:

At last summer's convention of the New England Association of Fire Chiefs held at the Hotel Wentworth, Portsmouth, N. H., one topic which occupied a prominent part in the educational program's symposium was television.

Assembled fire chiefs heard Chief Chas. E. Stackpole of Lowell, Mass. describe the fire of June 18 last, in his city, which did damage in excess of $500,000 and which he believed started in a television studio located in the destroyed building. It was conceivable that the fire originated in a television set in the studio.

This is said to be the first large scale fire in which television was advanced as a possible or probable cause. Chief Stackpole's report heightened the interest of New England chiefs in the possible hazards of television. That interest was further whipped by a subsequent report of another, although less serious fire, involving a television set, given the open session by Fire Chief Benjamin L. Chase of Haverhill, Mass.

Haverhill Television Fire

There was no room for doubt about the cause and resulting outcome of this blaze, one of the first television fires to be fully reported, and painstakingly investigated by competent fire officers. At the request of the New England Association, Chief Chase submitted his own report, together with the opinions of Ralph Anderson, radio engineer who, with Chief Chase and Lieutenant Rowell C. Currier, Haverhill Superintendent of Fire Alarm, conducted the investigations.

In his communication to FIRE ENGINEERING Chief Chase writes:

"On June 24, 1948, at 4:21 A.M. we received a box alarm for a fire at 43 Washington Street (Haverhill). Upon arrival we found the radio store which was located on the street floor heavily charged with a white smoke and two sprinkler heads in operation.

"A further investigation showed that the fire originated in a table model television set, from which the fire communicated to the wall and traveled to the ceiling, setting off two sprinkler heads which had completely extinguished the fire.

"While I was tracing out the wires in order to determine which sets were connected, the owner arrived and I saw him reach for the switch on the radio set; I feel sure that the set was on and that he unconsciously shut it off. He states that he does not remember whether he did or not.

"After the clean-up and sprinkler system restored, I ordered the set removed from the store to my office for further investigation. I left for the convention later in the morning. While at the convention I met Ralph Anderson, a radio engineer who, after hearing about the

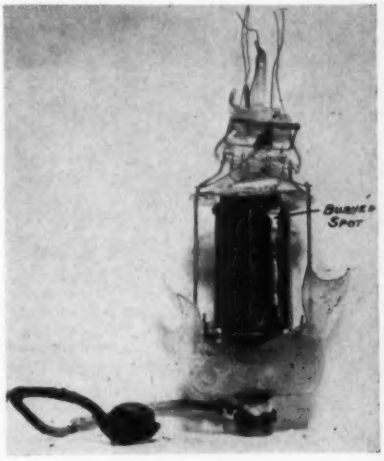


Figure 8

fire, volunteered to assist me in my investigation. He returned to Haverhill with me and together with Lieutenant Rowell O. Currier, my own Superintendent of Fire Alarm, we instituted the investigation. I employed a photographer to take pictures as we proceeded. Copies of these pictures are supplied herewith; they are numbered and referred to in Mr. Anderson's report, a full copy of which is enclosed. We all know Mr. Anderson to be a radio expert."

We are privileged to quote Mr. Anderson's report. He states:

"Probable cause of fire in television set (giving the name of the manufacturer, model and serial number of the set.)

"Fire alarm box 3113 at 4:21 A.M. for fire at 43 Washington Street, Haverhill, Mass. The above mentioned radio was burned very badly and also was

(*Continued on page* 734)

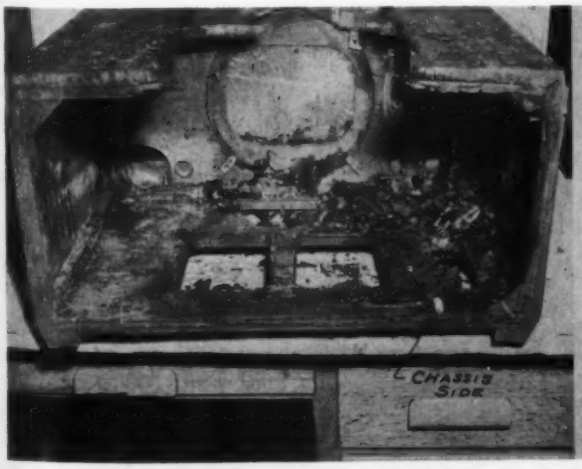


Figure 6

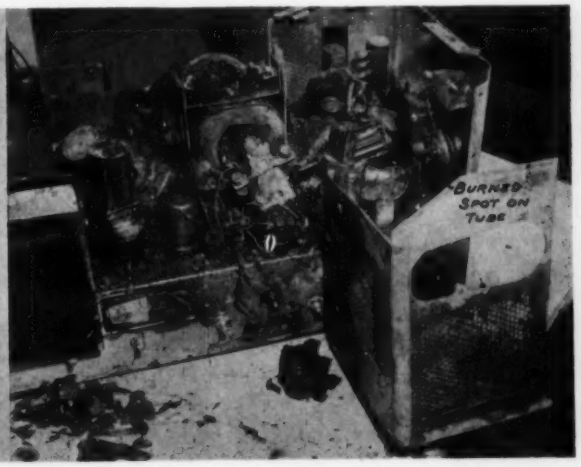


Figure 7

Wet Water Credited with Quick Dwelling Fire Stop

Chief Lloyd Layman of Parkersburg, Offers Deductions Based on Recent Personal Experience

A SPECIAL REPORT

Editor's Note: **One of the difficulties in adequately reporting any radical development in the field of fire control is to secure authentic factual information about it direct from the fire ground as well as the laboratory, and to properly interpret that information.**

The hard-boiled fire chief likes to reserve judgment on any extinguishing device or agent, or method until he has plenty of facts to support all the theories and claims. More than anything else, he wants "case histories"—records of actual and typical applications of the materials and methods. And the closer these actual cases approach his problems and his needs, the happier he is.

FIRE ENGINEERING was the first to introduce wetting agents (and their makers) to the nation's fire service. Since then it has attempted faithfully to bring its readers progressive developments in this, as well as in all other fields of extinguishing agents. In so doing it has purposely dwelt more heavily on the practical than on the theoretical applications of wet water. Unfortunately, many accounts of the use of this newest extinguishing medium could not be published for lack of evidence to support statements.

Now comes a "case history" which is not only comprehensive in detail but includes some logical observations and deductions that bear profoundly on the entire broad question of the place of wetting agents in fire control.

What gives this history, and accompanying comments added weight is the fact that they come from a foremost student in the modern techniques of fire control, Fire Chief Lloyd Layman, of Parkersburg, W. Va.—former Commander, USNR, in charge of Coast Guard fire training during World War II.

FIRE ENGINEERING is pleased to publish Chief Layman's businesslike account of a typical dwelling fire which was handled almost entirely with treated water. The account is offered both as a model of operations reporting, and as a suggestion for students of fire control who see in "wet water" possibilities for improving their own position.

Acknowledgment is made to Chief Lloyd Layman for permission to use his text and illustrations and Mr. Hugh McNair of Carbide, Carbon Chemical Corp. for additional data, and diagram.

At 7:50 P.M., June 8, 1948, the Parkersburg Fire Department, Parkersburg, W. Va., received an alarm for a fire in a dwelling at 917 Mary Street, that city.

The structure was of one story frame construction (27 ft. x 28 ft.) with gable type, tin-covered roof and clapboard side walls. Front and rear views of this property are shown in the illustrations herewith.

The dwelling included: living room (15 ft. x 13 ft.); two bedrooms (each 7½ ft. x 14 ft.); dining-room, (8 ft. x 17 ft.); kitchen (8 ft. x 10 ft.); small room in rear of dining room 5 ft. x 6 ft.), and bathroom (5 ft. x 11 ft.)

Ceiling heights of living room and bedrooms was 9 ft. 10 in.; of dining room, kitchen, and small rooms, 7 ft.

Living room and bedrooms were finished with plaster on wood lath and wallpaper, the latter having been applied several times, one upon the other without removal of any earlier applications. Dining room, kitchen and small room were wainscotted and painted. Several coats of paint had from time to time been applied without removing previous coat.

Layout and Exposures

The house faced on Mary Street and had a narrow wooden porch off which a doorway opened into the living room; from this two interior doors opened into two bedrooms. Entrance to the dining room, in the rear of the bedrooms was made through another doorway in the living room, and from the kitchen located in the rear of the living room, but partitioned from it. A rear door led from an angle in the rear elevation of the structure into a small room, from which other openings permitted access to dining and bathroom. The ground floor layout is shown in diagram herewith.

Adjoining the dwelling on the southeast, a distance of 6 ft., was another one-story frame house. On the other side, at a distance of 9 ft. to the northwest there was a two-story brick building having multiple occupancy. Two windows in the fire structure opened toward the brick exposure, and one, from the kitchen, faced the adjoining frame structure. There were also two windows facing Mary Street, and three opening onto the back yard.

At the time of the fire the temperature was 64 deg. F.; the wind 5 miles per

Left: Front View of Involved Building. This Picture Was Taken Several Days Following the Fire. Right: Rear View of Involved Dwelling Showing Windows to Kitchen, Small Room and Bathroom. Photo also Shows Debris Removed from Dwelling Following Fire. Note One-Story Frame Dwelling at Left Across Six-Foot Alley. This Picture Was Also Taken Several Days After the Fire.

hour, west; the humidity, 74 per cent. It was cloudy, but there was no rain.

Cause of Fire Unknown

It appears that the fire started in or near a basket of clothing which had been located on the dining room floor between the Welch cupboard and round table.

Kitchen After Fire, Showing Charred Paint Hanging from Ceiling.

The occupants were not at home at the time of discovery, and the first notification of the blaze came from neighbors after hearing what they reported sounded like a mild explosion. Flames were coming from the dining room window when the alarm was transmitted. Upon the arrival of the first firemen, the fire had involved the dining room, kitchen, small room and living room (shaded portion of diagram). Flames from the dining room window had ignited the roof cornice above that window.

Fire Department Response

The alarm brought the following response:

Engine 3; personnel: 2 firemen

Squad Company; personnel: lieutenant and one fireman

Additional personnel: Chief of Department; Fire Department Instructor

Total Department personnel 6. Two units of apparatus.

The actual equipment used in fighting the fire—which incidentally was entirely handled by small lines, included the following: Squad truck—150 ft. 1½-in. hose equipped with 1½-in. shut-off nozzle using as a tip a fog nozzle, booster type. Squad Truck contained 215 gallons of treated water (1% mixture) in booster tank. The fog nozzle was set at 30 deg. fog angle and was not changed from that position during the fire. Nozzle pressure of approximately 100 PSI was used, which provided about 23 GPM.

Engine 3: 200 ft. of ¾-in. booster hose, equipped with combination booster nozzle. Booster tank contained 30 gallons of plain water. The booster nozzle was used in the fog position throughout the fire. Nozzle pressure of approximately 100 PSI was used, which provided about 20 GPM.

In attacking the fire, Engine 3 laid a 2½-in. supply line from the nearest hydrant to the fire, attached hose clamp to this line which was then charged with water. If additional water had been needed, this supply line could have been connected to the 2½-in. intake on the Squad Truck. Hydrant pressure is sufficient to supply necessary volume for the booster pump through the 2½-in. supply line.

The 1½-in. line from the Squad Truck was laid to the left side of the involved house and treated water was used to knock down the flames in the dining room and kitchen by operating the nozzle through the dining room window. A major part, if not all of the water used in this operation was converted into steam, which cleared these rooms of smoke. There was very little smoke given off by charred materials after the treated water was used. This line was then moved to the front porch where entry to the living room was made through doorway A. Treated water was used to extinguish the fire in the living room.

The booster line from Engine 3 was laid to the rear through the passageway along the southeast side of the house. This line was advanced through the doorway leading into the small room and extinguished the fire in that room, and it then completed extinguishment of the remaining fire in the dining room and kitchen. A small section of the ceiling in the living room was opened to gain access to the attic; it was determined the fire had not penetrated that area.

Respiratory protection was not used by personnel. It was possible to effect extinguishment without serious physical discomfort from either smoke or heat. The smallness of the structure and the locations of the openings permitted ready access to the involved areas.

The nozzle of the line from the Squad Truck was handled by Lieutenant F. C. Grimm, while Fireman H. W. Muhlmann used the nozzle from Engine 3. Other operations were carried out by Department Instructor J. W. Bradford and Firemen V. N. Walters and Gayle Knopp.

Minimum Amount of Water Used

The total volume of extinguishing agents used was as follows:

Plain water, from booster tank of Engine 3 . . . 80 gallons

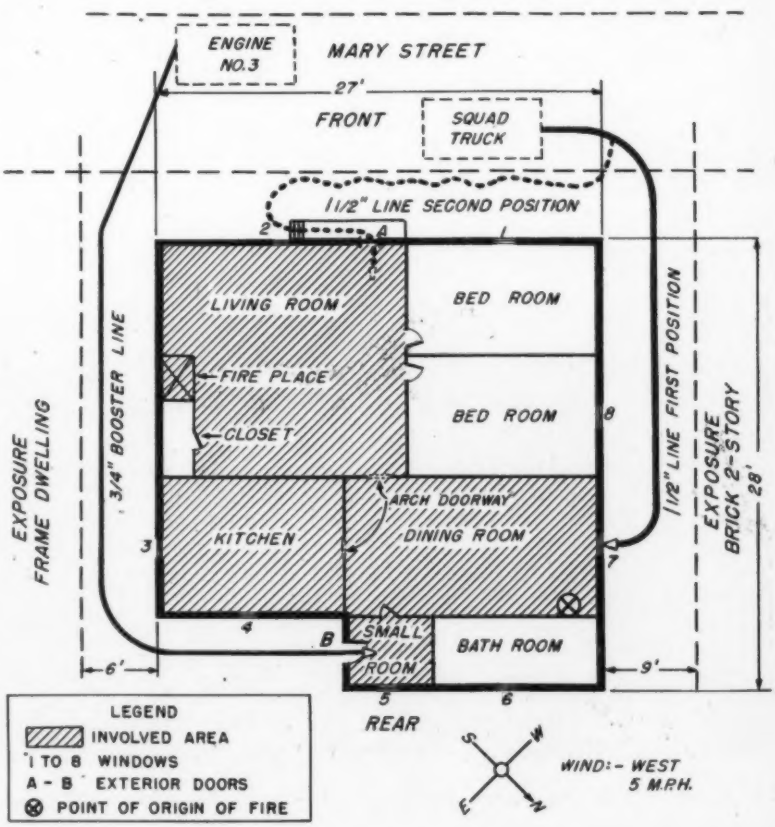
Treated water, from booster tank of Squad Truck . . . 140 gallons

Total water of all kinds used, 220 gallons. This includes water used in overhauling. After deducting the volume which was required to fill the pumps and hose lines, not more than 200 gallons of water were used in the extinguishing operations.

Chief Layman's Conclusions

There was no damage from water to either the building or contents. The only water which remained in liquid form on the premises was less than a gallon on the floor of the small room, where plain water was used. The rug on the living room floor was absolutely dry. Although this house was very old, it was in good repair and the contents were of very good quality. The adjusted loss on the building was $1,500.00; on contents, $2,000.00.

All interior doors except those of the bathroom and closet in the living room were open during the fire. The door to the closet in the living-room was slight-



ly ajar and the sleeve of a shirt which was exposed was scorched, but other than the odor of smoke, there was no damage to the other clothing. There was no damage to the contents of the two bedrooms. The two exterior doors, front and rear shown in the diagram were closed.

The panes of the rear window of the kitchen were out. The glass of the window next to the frame exposure was not broken until after the initial attack through the dining room window had been completed.

Fog Used Throughout

The entire volume of water, both plain and treated, was applied in the form of finely divided particles. The major heat producing area was confined to the dining room, where the furniture, ceiling and walls were fully involved. Most of the treated water was used in this room, yet there was no "run-off." The volume of condensed steam which escaped from the building gave evidence that the water was being applied in an effective manner.

In the words of Chief Layman, this fire removed all doubts from the minds of the department personnel regarding the effectiveness of treated water over that of plain water. All officers and members of the department were given an opportunity to visit the property and make their own personal observations.

Finally in his statement, Chief Layman makes these points: (1) This fire could not have been extinguished as quickly and as easily by using plain water, and a much greater volume would have been required. (2) This fire could not have been extinguished with the same volume of treated water if it had been applied by solid streams."

Editor's Conclusions

It will be noted that this "working fire" was handled in its entirety by only six members of the department, including the Chief, Department Instructor, and a lieutenant. Considering the method of attack, using two lines, laying in of supply-line and applying clamp, it must be deduced that (1) the personnel was well trained and efficient (2) the equipment used in the attack operations was most ideally suited to fast action by the limited personnel. The case appears to attest the value of small lines, armed with fog nozzles operating from booster tanks and charged with treated water.

Second, the effectiveness of water fog —particularly that incorporating treated water, in affording personnel protection, permitted rapid advance into the structure without protection of respiratory equipment. Any normal dwelling fire, involving furnishings including overstuffed furniture, is usually accompanied by considerable smoke concentrations. Although the evidence on the effectiveness of treated water-fog in combatting smoke concentrations is as yet incomplete, this case would appear to buttress the contention that fog with treated water is effective in reducing smoke concentration. Chief Layman does not comment at length on this factor, but he has a theory which is worth pursuing further. It is that the large volume of steam generated by the use of wet water (a fact noted by most users of this newest extinguishing agent) displaces much of the smoke in the atmosphere, thereby accelerating ventilation. It is possible that further study of the relation of steam generated by treated water applied to burning material, to the displacement of smoke from that material, will disclose heretofore undiscovered attributes of "wet water."

A further observation that suggests additional research is prompted by another detail of operation: The report indicates that although only a booster size nozzle operating at 100 PSI was employed, the discharge from this nozzle, through a window on the northwest side of the building was effective in knocking down the fire in the kitchen, located at the other, or southeast side of the dwelling. In order to do this, the extinguishing agent would have to enter the kitchen through a doorway, which was 17 feet beyond the window through which the nozzle was operating, and then would have to continue for another 10 feet in order to reach the extremity of the kitchen.

It is obvious that this kitchen was fully involved. Because of the distance from the point of application to the open doorway, direct contact from the discharge of this nozzle could only have been effected on the very small area of the kitchen that was directly opposite the open door. To have knocked down the fire, therefore in the balance of this room, one of three conditions probably occurred:

1) The fog after passing through the doorway must have been distributed throughout the entire room by air currents.

2) The knock-down may have been caused by a heavy generation of steam that filled the entire room, or

3) A combination of 1 and 2.

It is quite possible that conditions 1 or 3 were most probable. Chief Layman, whose extensive research into the application of convection currents in extinguishing shipboard fires has been widely publicized in this journal, may have thus uncovered in this particular fire a field for further study.

Safety Steps to Control Cotton Fires

A five-point campaign to reduce cotton bale fire losses has been proposed by the National Cotton Council and its facilities, the Agricultural Extension Services, the National Cotton Ginners Association and the National Cotton Compress & Cotton Warehouse Association.

It is reported that 100,000 bales were destroyed in the 1945-46 season and that for the 1947 season 81 per cent of the cotton fires originated in "firepacked bales." Firepacked bales are caused by trash such as rocks or metal, striking against gin machinery and igniting the cotton.

The Council is having displayed in gins, warehouses and compresses a poster bearing the following warning advising workers to:

1. Not smoke or carry matches.
2. Guard against rocks and metals in seed cotton, which might strike against gin machinery and ignite cotton being ginned.
3. Keep gin and warehouse plants and equipment clean and free from trash.
4. Keep informed on fire-fighting equipment and regulations.
5. Report fires and fire packed bales immediately to receiving compresses and warehouses.

Left: Dining Room, Showing Window Opening Through Which the Treated Water Was Applied. Right: Living Room, Bedrooms and Dining Room.

Do Fire Service Communications Measure Up to Modern Needs?

Critical Study Indicates Improvements in Vital Emergency Communications Are Not Being Accepted and Installed by Fire Service as Quickly as are Advancements in Other Facilities

By ROI B. WOOLLEY

Editor's Note: **Each year for over 70 years, this journal has inventoried the fire service of the nation, taking stock of its assets and liabilities, estimating its future requirements, and recommending progressive steps to bring the service into line with the times.**

Running current throughout all these studies has been emphasis on fire service communications, and the need for improving them. In retrospect FIRE ENGINEERING was the first to inform the service on improvements in every root and branch of the communications field; further, this journal has actively promoted every new product, principle and policy, whether in wire or electronic communications.

This year, reviewing and evaluating communications facilities in the fire service and weighing them against the job that must be done by the service to stem our mounting fire losses, the editors have reached certain conclusions, all of them pertinent, some of them important.

This study is designed to (1) impress FIRE ENGINEERING'S readers with the vital importance of communications; (2) the need of improving and modernizing fire service communications all along the line, to meet present and future requirements and, (3) to encourage re-evaluation of fire service communication facilities by cities, towns and villages, in the light of present-day needs, products and costs.

AT the risk of being trite, let's say at the outset that in the fire service, next to the water supply system, or on a par with it perhaps, comes the communications system.

The ablest firemen with the best equipment and an ocean of water at their disposal can't do a thing about extinguishing a fire until they are summoned. And the more quickly they are called and get on the job, the better for them and the worse for the fire.

The simple fact alone should be sufficient to inspire those responsible for controlling destructive fire to devote to communications facilities the same thought, time and trouble, and money, that they give other essential factors of the fire service. Unfortunately however, all the evidence indicates this is not being done. Worse still, in too many cases it appears that top-ranking officials of the fire service itself are not cognizant of the importance of communications in their calling, and the need of streamlining their communication facilities to bring them into line with the needs and improvements in other walks of the fire service.

The issues of FIRE ENGINEERING are replete with accounts of the hazards and fire control problems of this chemical and "atomic" era, which the fire protection engineer and fire officer must recognize and against which he must be forearmed. Elsewhere in this issue alone is presented convincing evidence of what the service faces, and will have to face in days to come. And also herein, is presented evidence to show the state of preparedness of the fire service for meeting the situation.

If the nation's fire forces are deficient in modern fire fighting apparatus, fire stations, repair shops and training grounds, as is the case, they are even more lacking in their fire communications facilities. Any reader who will thoughtfully explore the possibilities of the newest advances in communications facilities available today to the fire service, as described in this study, cannot help but subscribe to the foregoing statement.

The Tempo of Fire Is Accelerating

Another inescapable fact to which most students of fire control will agree is that today it is more important than ever to get to work on fire quickly and effectively. No one questions the axiom that the most critical period in the life of a fire is that period between its outbreak and its discovery and the response of fire extinguishing forces. That talk about the "first three minutes of a fire" determining its extent and severity is sound doctrine.

Little can be done to shorten the time between the outbreak and discovery of fire until automatic fire detection and notification systems become more widely used. Before they can be so adopted, they must first be better known and understood and here is a fertile field for study by fire officials.

What apparently is being overlooked in the fire fighting profession is the fact that fire itself has taken new wings, is being speeded up. More fires today get off to a flying start than ever before. The answer again is this chemical and combustible age in which we live and work. Yesterday, explosions more often followed fires; today they precede it, to give it acceleration. Thus more fires assume multiple-alarm proportions more quickly than they did a decade ago. And today the fire fighter finds more "D.O.A." (dead on arrival) than he did before.

All of which is further sound reasoning for speeding up our fire detection, notification and response dexterity, if we are ever to get ahead of and keep ahead of changing conditions.

For a number of reasons that need not be reviewed at this time, it appears

Photo Courtesy R.K.O. Pathe

"Nerve Center" of New York's Fire Communications System

The Manhattan fire alarm central station, one of five that serve New York City, is located in Central Park. It is undergoing improvements as part of the fire department's improvement program. Radio is being extended; overhead wires replaced by underground circuits; new boxes installed, etc. Acting Deputy Chief of Department Thomas P. O'Brien directs the Bureau of Fire Alarm Telegraph, as it is still known.

Photo Courtesy Motorola

Some of the Apparatus in Miami, Fla., Fire Department Which Is Equipped with Two-Way Radio

difficult to further greatly reduce the time of response of fire forces between their notification of the fire and their arrival at the fire scene. If precious seconds are to be saved, at least so far as fire communications are concerned, it must be in the stages of discovery and alerting of the fire forces, and in facilitating fire control operations on the fire ground.

Fortunately for the fire service and the nation it protects, modern science has developed ways and means to accomplish these desired results.

But before reviewing these developments, let us look briefly at the communications picture as it exists today.

Present Situation

Communications Headquarters Outmoded?

Any study of fire service communications may well start with the "heart" of the system, the communications headquarters. The importance of safely and adequately housing this vital system should be obvious, yet despite the recommendations of the National Board of Fire Underwriters and other interested agencies over a period of thirty years, to install communications headquarters in separate, fireproof structures, located a safe distance from exposures, we find many municipalities placing reliance upon a communications plant vulnerable to fire, hurricane, flood or other hazards, including enemy attack in the event of war.

Since the end of World War II, over 200 communities have signified their intention of replacing or rebuilding inadequate or vulnerable fire communications headquarters with suitable disaster-safe structures. Investigation, however, discloses that very few of these have carried out their intentions. On the contrary, a number have definitely postponed badly needed improvements in this field.

We find personnel, in whose hands rest the very life of the community, and its fire service personnel, working in buildings which are poorly located; poorly ventilated; heated and lighted; and with no acoustical (sound) conditioning. Necessary expansion of fire alarm and other communication facilities has resulted in overcrowding of many central offices with resultant increase in noise and confusion where there should be quiet, order and system.

In 1944 Fire Engineering, as a result of a survey of communications, pointed out the lack of planning for postwar rehabilitation and improvements in fire service communications, and urged chiefs to go into executive session with their heads of communications to develop such programs. Today, four years later, that recommendation may well be repeated because it is a fact that few comprehensive postwar development programs have been prepared or, if so, carried through.

Communications Equipment Deficient?

Not only are many fire communication headquarters sub-standard and obsolete, but so, too, are mechanical facilities of the communications plant.

Long depression years, followed by wartime demands on the service, with inability to meet replacement needs, let alone provide for expansion (and failure to provide for the necessary postwar rehabilitation) have left many communications systems dangerously below standard. This weakness is noticeable in the following:

1. Insufficient fire alarm boxes. Even in high value districts the "box a block" standard is not being met in many cities.

2. Many communities of some size have no fire alarm systems worthy of the term. Too many are relying on the telephone as the sole means of communication. Too many have no fire alarm boxes either on the streets, or to protect schools and places of assembly.

3. Replacement of old style fire alarm boxes is not keeping pace with needs.

4. Expansion of fire alarm systems is not matching the development of municipalities, geographically and economically. Municipal limits have expanded, suburbs now contain industrial and commercial hazards where before were residences, but communications systems in the areas have not been expanded to protect these added risks.

5. Vulnerable overhead lines are not being replaced by underground circuits as they should. After each wind or sleet storm that levels overhead lines and poles, the practice has been to replace them as they were, ready for the next disaster. Commenting on the vulnerability of overhead lines, the National Board of Fire Underwriters says (NEBU Bull. 117 "Fire Alarm Service"): "The needs of a city in this connection (placement of alarm circuits underground) are so vital that expenditures for underground construction should take precedence over those for replacement of equipment where such equipment is still usable."

6. Central station communications facilities are inadequate, both as regards telephone and telegraph. Surveys indicate vast rehabilitation needed in switchboards, rectifiers, charging boards, transmitters, repeaters, registers; in fact, in every mechanical detail of the communication's "plant." Adequate stand-by generator and/or battery equipment is lacking in numerous instances.

Communications Are Increasing

In the face of the need for improvements in almost every root and branch of communications is the fact that communications traffic is increasing. Demands on the systems are up, and growing. This is shown by the increasing numbers of alarms (of all types) and fires—large and small. Study indicates that this growth is not being paralleled by improvement in communication facilities.

Photo Courtesy Motorola

Radio Control Desk of Long Beach, Cal., Fire Department

Delayed Detection and Notification

Inadequacy of present day communications is reflected in some degree, by the increase in delayed alarms. Delayed discovery and notification to the fire forces, together with slowed response, due to traffic and other delays, are contributing materially to increased fire losses and fire control operations.

Three major reasons for the delayed alarm (all of which can be corrected) are: First, tardy discovery. This difficulty can be helped in some degree by installing fire detection systems connected with the municipal communications headquarters, or a central supervisory station. Even a local system with a loud gong or siren on the outside of a protected building may serve to get action. Secondly, efforts of watchmen or workers to extinguish a fire before calling the fire department. This error can only be corrected by educating and instructing the public. In some areas, penalties are being prescribed for failure to promptly call firemen. Thirdly, and most important, is the lack of a public municipal fire alarm system, or deficiencies in an existing system (as previously indicated).

Fire alarm systems were not designed for the cities with paid departments only. Prompt alarms are even more essential in communities where firemen have to be called from their homes or places of business. Time that can be saved by a public means for quickly activating the fire department is a vital factor in the control of fire.

Delayed notification of the fire service is frequently due to the use of the telephone as a communications medium.

False Alarms Increasing

Reports from many communities indicate that false alarms of fire are increasing along with the number of fires. False alarms are preponderantly greater in those places having box alarm systems; however, the telephone is no stranger to them. The difference is that telephone false alarm senders have a better chance of being apprehended and convicted by means of recording devices, than where the public boxes are used.

Over the years Fire Engineering has attempted to evaluate in lives and property, the cost to the nation, and the fire service, of these false alarms, but without great success. Efforts to curb the evil have likewise been of little avail, although some results have attended the use of "black light" and fluorescent powder, and warning devices on individual boxes.

Perhaps no single detail of fire service communications offers such need for improvement as the reduction of malicious false alarms.

Communications Personnel

To plan for, install, operate and maintain a modern communications system, however large or small, calls for a high degree of experience and technical ability. Such skill is not easily acquired. It must be learned. And it must be paid for.

During the last war, in spite of the obvious need for deferring technically trained fire communications specialists, many were taken into the armed forces (where their talents were wasted). Since that time more lucrative possibilities in other fields has held the number of technical specialists available for fire communications to a minimum.

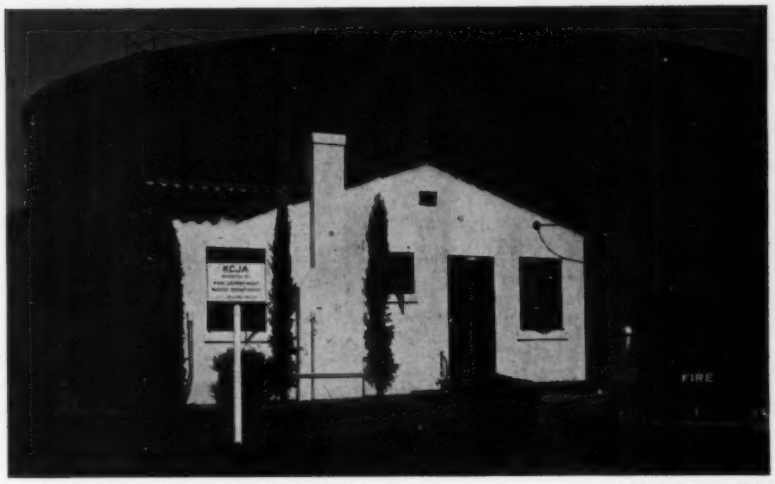


Photo Courtesy Motorola

Radio Broadcasting Station at Long Beach, Calif., Which Is Jointly Operated by Fire Department and Water Department

Two things are necessary before this situation can be improved: first, proper recognition in position and rank, of fire service communication personnel; next, salaries in line with comparable skills in other fields of endeavor.

There is another factor to be considered in this respect—

Cooperation and Coordination.

In the majority of the nation's municipalities, fire communications are an integral part of the fire department, which is responsible for administering and operating the fire alarm and other communications facilities. In those cities, communications are the responsibility of the fire chief. In other cities, fire, police and traffic communications may be merged and directed through an independent agency. In still others, a combination of civilian and uniformed fire officials responsible for communications.

This is not the time to discuss the merits of the respective setups, but it should be pointed out that the present arrangement, in some cases, leaves room for greater efficiency and economy; generally speaking, where there is divided control and authority, there is lack of coordination and efficiency.

Whether or not he has the responsibility for the communications systems in his community, the fire chief must cooperate with his communications personnel and plant, and he must try to coordinate the various elements of the local communications system. Putting it another way, more fire chiefs might become better acquainted with their own fire communications plant and its personnel, and conversely, more fire communications heads might learn more about the problems of the fire chief and fire department administration by cooperating more closely with the latter.

Public Apathy

Whether the fire alarm and communication system is controlled by the fire department or is a separate bureau, the need of maintaining the system at top efficiency is of concern to the fire chief. It behooves him to know all about his communications, and to join actively in every program for its improvement. As chief of the department, he is in the best position to promote improvements with local government. Actually, in most cities, he is the one responsible for the success or failure of all fire service communications facilities.

Public ignorance of fire communications in the fire department is universal. It is one of the reasons why communications' budgets are so often trimmed ahead of items for other fire service facilities.

Needful improvements in communications cannot be accomplished without the sanction and backing of the public. For this reason, the fire department should solicit and gain the aid of such bodies as service clubs, chambers of commerce, women's clubs and other influential organizations in the program for better, more modern fire communications.

The following section of this study deals with elements of those improvements.

Radio—New Tool for the Fire Service

It is said that modern two-way radio is the only element that can be added to the average fire department and made to produce a financial return on investment. A score and more of fire chiefs who have employed radio long enough to prove the fact, claim that it is actually saving their departments money and thus paying its way.

The Federal Communications Commission, highest authority on the radio, has recognized the importance of this most rapid, flexible and dependable instrument for fire communications and has allocated to the service the necessary radio channels to facilitate its adoption by fire forces of federal, state, municipal, forestry, and rural fire services. Therefore any attempt here to recount all its many advantages would be superfluous. There can no longer be any question of the advantages of radio in the fire service; the only question is, how quickly will the service adopt and employ it.

There are, however, some later day developments in the application of radio to fire communications which should be mentioned. Most important of these is the "Rules Governing Stations in the Public Safety Radio Services" issued by

the Federal Communications Commission in the summer of 1948. Lack of space prevents publication herein of the entire document, defined as "Part 10"; however, the section devoted to fire service radio follows:

FIRE RADIO SERVICE

10.201 Eligibility for license—Authorizations for fire radio stations will be issued only to governmental sub-divisions including counties, towns, and similar entities, the District of Columbia, and persons or organizations charged with specific fire department activities. Applications from organizations other than governmental sub-divisions must be accompanied by a statement from the governmental sub-division having legal jurisdiction over the area to be served, supporting the request.

10.202 Permissible communications—Stations in the fire radio service are authorized to transmit—

(a) Communications relating to public safety and the protection of life or property;

(b) Communications essential to official fire department activities.

10.203 Points of Communication—(a) Fire base stations are authorized primarily to intercommunicate with mobile stations in the Public Safety Radio Services. Fire mobile stations are authorized to intercommunicate with other mobile stations and with base stations in the Public Safety Radio Services.

(b) On a secondary basis, fire base stations are authorized to intercommunicate or to transmit to receivers at fixed locations under the following limitations and conditions:

(1) The messages transmitted are of immediate importance to mobile units.

(2) Normal communication facilities between the two points of communication are inoperative, inadequate or unavailable.

10.204—Frequencies available for fire base and mobile stations—(a) The following frequencies are available for assignment to fire base and mobile stations:

Base and Mobile Stations	Mobile Stations Only
154.13 Mc	153.77 Mc
154.19	153.89
154.25	153.95
154.31	154.01
154.37	154.07
154.43	
158.37	158.43

(b) The following frequencies are available for assignment to fire mobile stations authorized to operate with a maximum plate power input to the final radio stage of 3 watts or less:

32.42 Mc	158.83 Mc

(c) In addition to the frequencies listed in paragraph (a) of this section, the following frequencies are also available for assignment to fire base and mobile stations upon a satisfactory factual showing of need, therefore as set forth in Section 10.16 of these rules.

Base and Mobile Stations		
1630 Kc	33.70 Mc	33.86 Mc
	33.74	33.90
	33.78	33.94
	33.82	33.98
	46.04 Mc	46.20 Mc
	46.06	46.22
	46.08	46.24
	46.10	46.26
	46.12	46.28
	46.14	46.30
	46.16	46.32
	46.18	46.34

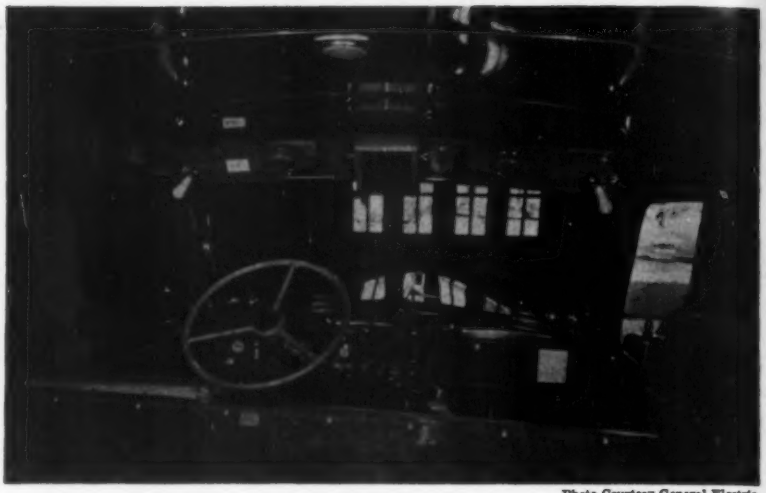


Photo Courtesy General Electric

Two-Way Installation in One of Rockford, Ill., Latest Cab Type Pumpers

Mobile Stations Only	
33.46 Mc	33.62 Mc
33.50	33.66
33.54	
33.58	
46.36 Mc	
46.38	
46.40	
46.42	
46.44	
46.46	
46.48	
46.50	

10.205 Microwave frequencies available for experimental fire base and mobile stations — Frequencies in the bands listed below are available for assignment to fire base and mobile stations on an experimental basis only. The exact frequency, or the authorized channel, will be specific in the authorization.

454	456 Mc
2450	2500 Mc
3500	3700 Mc[5]
6425	6875 Mc
11700	12200 Mc

10.206 Frequencies available for fire fixed stations—Frequencies in the bands listed below are available for assignment to any type of fire fixed station required to augment, supplement or extend a fire radio system. The exact frequency, or the authorized channel, will be specified in the authorization. The bands above 952 are available on an experimental basis only.

72—	76 Mc[5a]	2500	2700 Mc
		6576	6875
952	960	12200	12700
1850	1990	16000	17000
2110	2200	2600	30000
2450	2500[5]		

New Applications of Radio Inspections

Since mobile radio has been put to work by the fire service, particularly in municipal departments, new applications have been disclosed. One of the most important of these is in facilitating company and departmental inspections and fire prevention programs.

Equipped with two-way radio a fire company can leave its fire station with a full crew, if desired, and undertake company building or other inspections, without being "out of service." This system of inspection has the advantage of enabling every man in the crew (except the driver or a single person left to monitor the radio) to participate in the inspection. By this means, inspection time can be shortened, more effective and thorough surveys made and the period between inspections reduced.

Usually the localities for inspections are laid out by the company or chief officer beforehand and certain days and tours designated for inspections. At the appointed time, the crew, manning the radio-equipped apparatus, reports out of the fire station, but not out of service, contact with headquarters being maintained by radio.

The apparatus is placed as near to the premises to be inspected as possible and the crew leaves the vehicle to cover assigned areas—one man, usually the driver remaining behind. Should an alarm be received for a fire in the district to which the company normally responds, or if for any reason it is wanted elsewhere, the monitor simply sounds the siren or bell, the men respond on the double, and the unit responds, with a minimum of time lost.

If the officer or radioman wishes to report any findings, violations, special hazards or other information, or secure instructions from headquarters, it is possible to do so by radio.

Different departments have evolved various ways of employing radio in this type of departmental business. Another application of the same principle is in fire prevention activities.

Apparatus and crew may participate in a parade, or public meeting or be in attendance at a demonstration or exhibition, while still remaining in service. As long as the event takes place within the effective range of the department's radio equipment, and the set is monitored, a company, or companies, if need be, may remain in service, ready to respond for fire fighting.

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[5]Subject to no protection from interference due to the operation of industrial, scientific, and medical devices on frequencies in this band.

[5a]The frequencies between 72 and 76 Mc are available for assignment only in those areas where television channel 4 or 5 has not been reserved for use. Applicants for this band should communicate with the Commission with regard to particular location (s) prior to the filing of an application.

In addition to its application on the apparatus of departments not possessing a municipal alarm system, with street boxes, and where some means must be employed to alert the volunteer firemen, radio has been put to good use.

Volunteer departments have lost valuable time when the siren or horn failed, or when men could not find out where the fire trucks had gone. Radio eliminates these and other difficulties.

One type of radio employed in this connection uses a "squelch" which remains silent except when a signal is being broadcast on the frequency on which the receivers are tuned.

The system in question consists of two duplicate station units, for transmitting, (one in reserve) and individual receivers which are located in firemen's homes. In addition two-way mobile units are located on the fire trucks.

A license for frequency assignment, and station operation is secured from the FCC. Radio engineers survey the terrain and install the necessary antenna. Power is taken from the domestic AC supply.

When the man on duty receives the report of a fire, he writes down the address, picks up his microphone, presses a button on the radio panel, which puts out a 1,000 cycle tone, then announces the location and nature of the fire, together with any additional information that might be necessary. The usual announcement goes like this: "Automobile fire, in front of 30 Main Street—plug Main and Front." This message is repeated twice, and by the time the second announcement is on the air, firemen are on their way. Usually one, or more, of the men receiving the broadcast notice is near enough to the scene to beat the apparatus there, and he stops at the hydrant where he meets the apparatus, while the other members proceed to the fire.

Carrier Radio

Another recent development in the alerting of volunteers is the use of a carrier current superimposed on existing electric lighting wires of a city, whereby "call firemen" may receive a coded fire alarm within their homes or places of business.

A small receiver is provided each fireman to be alerted, and this set is plugged into any electrical convenience outlet in the house. The alarm, sent out by headquarters, is received on a code type bell or by a flashing light at the option of the fireman.

The receivers in this type system are said to consume no current when in stand-by position and only a few watts of power when the actual alarm is being received.

"Walkie-Talkie"

Although the value of "walkie-talkie" and "handy-talkie" radio sets in fire service communications has been clearly demonstrated, it was only recently that manufacturers introduced products designed to meet the specific needs of the fire serivce. Military restrictions, difficulty in procuring material and radio frequencies, following the last war, slowed development of this essential communication facility.

Even prior to the war, some cities had experimented with "walkie-talkies" for the fire departments. One of the first to introduce such a set was Chicago. In New York, the fire department equipped a small radio laboratory, and several of its personnel developed a back-pack set which proved its worth in actual fires upon numerous occasions, particularly at the Empire State aircraft crash fire. However, with changes in administration the radio laboratory was discontinued although, it is reported, the city has not given up the idea of future use of this facility.

A number of fire officers have attempted to utilize surplus Signal Corps "walkie-talkies" but they have proved unsatisfactory. The FCC required permits for such use and, in addition, the sets were mechanically unsuited to fire service needs.

Meanwhile, radio manufacturers, some of whom had built the Signal Corps equipment, continued their efforts to develop the type of unit that would meet the requirements of the fire service. In general, those needs were: equipment that gave the user absolute freedom of movement, not tying up hands or arms, or restricting movement or vision. Hands must be left free to permit climbing, or aiding in fire fighting or rescue operations. Next, the operator must be able to maintain constant contact with other radio units; some sort of ear phone or hearing device was desired, that would be effective without being cumbersome or complicated. And naturally, there must be clear interference-free reception wherever the equipment was used (in the early days, operation of such sets in the vicinity of high power circuits, or certain types of electrical installations, impaired their effectiveness.)

Technical consideration called for a power output and an overall efficiency capable of providing sufficient signal coverage together with a good frequency stability. It was essential that the power supply also should last a considerable length of time before a change of batteries was needed.

Finally, there was the safety factor. Rigid antennas extending above the head of the operator might come in contact with live lines, causing injury, and it was essential that antennas offer the least possible obstruction, and permit freedom of movement. They should be adequate for the purpose, but adjustable, and properly grounded.

In Atlantic City, members of the fire department developed a unique personal "head-set" with receiver and transmitter as two separate units, having separate antennas and power supplies. The receiver is contained in a small leather case, worn on the fireman's belt; the antenna is a small, flexible, tinsel wire, worn around the shoulder. The earphone is worn on or near the ear and held in place by a small thin headband. The transmitter is located in the top of a fibre helmet, such as used by linemen and wreckers. The antennae is of the rigid type and is mounted on the rear brim of the helmet and suspended downward parallel with the operator's body. The set contains four tubes and is crystal controlled. The receiver also employs four tubes. The equipment operates on 33.1 megacycles.

Small, compact, portable "walkie-talkie" sets which meet most of these specifications have been introduced by a number of the larger radio manufacturers. They are already being used by state conservation and forestry services and the fire service may be expected to add them as rapidly as their value is demonstrated.

"Walkie-Talkie" is of particular value on the fire ground. It enables the officer to keep in close, instant contact with his men, and with group units. It provides instant, accurate communication, within the range limits of the equipment; the range is from half a mile to three or more miles depending on the power. In forestry and field operations "walkie-talkie" is indispensable. By means of it, field units can be directed from a GHQ (fire headquarters) or from an airplane or helicopter. In the city also "walkie-talkies" save long messenger trips to the upper floors of tall buildings, or to ships at anchorage, or dock in the waterways.

One other attribute has developed through its use. This is in training fire forces, both on the training ground and in the field. These supplemental uses are expected to multiply.

By tying in a "walkie-talkie" to certain P.A. systems, it is possible to amplify messages sent over the former, projecting the messages over a considerable area, as has been done with the magnification of mobile radio-telephone messages.

Concluding, "walkie-talkies" will have a definite place in fire service communications, now that practical, handy sets are available at reasonable cost. They will supplement and augment mobile two-way radio, and on the fire ground will provide communications where mobile automotive radio units cannot be operated.

Photo Courtesy Motorola, Inc.

"Handie Talkie" in Use at Fire

New type back-pack FM radio in use by chief officer directing operations on the fire-ground. This set is compact, has crystal controlled FM transmitter and receiver, with dry battery supply. Weight 7 pounds. It provides communication in excess of two miles between units.

Voice Amplification

The difficulty encountered, during the din of operation at a fire, in transmitting orders to fire fighters, has long been recognized. In the early days of the volunteers, the speaking trumpet served as a partial solution of the problem but with the displacing of hand engines by steamer, the speaking trumpet was relegated to the ignoble use of a flower holder at parades, and as a relic on the shelves of museums.

Voice amplification is not new; many ingenious schemes were employed to project the voice ages before Christ. Its adoption by the fire service, however, is fairly recent, and dates with the introduction of electronics. Back in 1939, the Chicago Fire Department used portable public address systems, mounted on automobile trucks which also carried flood-light equipment. These were the then latest type R.C.A. public address or "loud speakers"—consisting of two 50-watt, 110-volt, 60 cycle power amplifiers, taking their current from the light trucks. Portable "mikes" were installed in the cabs of these light wagons, for use by officers in giving instructions to personnel.

During World War II, voice amplification received further impetus through the introduction of portable, battery operated electronic speakers and their broad use by the Navy and other services. Introduction of the power speaker into the nation's fire service received great impetus following the tragic fires in the LaSalle, Canfield and Winecoff hotels, where, it is believevd, many lives might have been saved had amplifiers been immediately available.

There are on the market today two general types of loud speakers or megaphones: the portable unit, which is electrically operated, and the truck-mounted loudspeaker, which employs a combination of electricity and compressed air. There are commercial P.A. systems which are full-electrically operated and these have been used by the fire services in emergencies. A number of departments have installed adaptations of this type of system.

Portable units are found in two types, one in which the battery box and amplifier unit is contained in a carrying case, and is connected to the megaphone by sufficient cable to permit the box to be placed on the ground while the unit is in operation. The total weight of this unit is around 30 pounds. The battery box contains a charger for charging the batteries; the megaphone has a trigger-control which regulates the flow of current. Amplification volume control is by a switch on the battery box.

The other portable unit is designed to be carried at all times and the connecting cable between battery holder and megaphone is not sufficient to permit the use of the unit when the battery box is placed on the ground. This latter unit is lighter in weight but does not include recharging unit.

Both of these portable amplifiers operate on direct current. The range may vary from one-half to one mile, while the voice may be amplified up to 2,500 times. These models are probably the most satisfactory for use at fires and other emergencies, for they can be carried by officers and aides and be at hand at any point for needed operation.

The electric-compressed air unit possesses far greater range than the portable type but it is unsuited for as many uses as the portables. One type of electric-compressed air contains a 25 watt generator or can be used on 110- to 220-volt alternating current. This must also have, as an integral part, a small compressor to furnish the compressed air to the unit. Power for amplifying the voice (or record, for record-players can be fitted to this type of unit) is derived from the flow of air into the unit from the compressor. This flow is controlled and modulated by the voice valve, a device driven by an amplifier of lower power output.

This unit, under average weather conditions, has an audible range of three miles, while under ideal conditions it has been heard up to eighteen miles. One mile range, even in the presence of considerable noise, is common performance.

Whisper Sounds Like Lion's Roar

Type of electric-air amplifier known as "old loud mouth" first demonstrated to Boston Fire Department in 1945. Carries human voice three to four miles, overriding high ambient noise levels. In the above picture fire chiefs inspect amplifier installation sound truck of the New Haven Fire Department.

As noted, this unit is mounted on a truck or other piece of apparatus on account of its weight and thus is not maneuverable and flexible at inaccessible points. Satisfactory operation of the larger type in conjunction with the portable electronic types has been accomplished.

Uses of Power Amplifier

The power amplifier has many uses in the fire service, certain ones predominant in the saving of life and reduction of property loss.

Photo Courtesy Audio Engineering Co.

Portable Power Voice Amplifier

Type of electric megaphone system developed during the late war, showing megaphone with trigger grip, cable and battery box. Range up to three miles under favorable conditions; directional. This type is becoming widely used by the fire service.

Bearing in mind recent catastrophes in which heavy loss of life was experienced, the calming of those endangered by fire may be a vital problem. Even though the fire department may be confident of controlling a fire promptly, there is always danger of persons imprisoned within the structure jumping before they can be rescued. Here is where a good voice amplifier may prove priceless.

The amplifier is a distinct asset in helping control and prevent panic through its ability for mass-instruction and direction.

In performing rescue work at fires, it permits not only calming those who might be endangered (or believe themselves to be) but instructing them in measures they must take to insure their safety.

For instance, proper jumping into a life net must be insured, likewise preventing more than one person leaping at a time, and the promiscuous throwing out of windows of luggage, furnishings and equipment. Directing imprisoned persons to safe channels of egress is also possible.

The instant evacuation of a seriously exposed building can be accomplished, and it is possible to effect the safe retreat of fire forces from an involved structure, by means of voice amplification.

Voice amplification may be advantageously used where life lines are shot to the top of buildings, to facilitate rescue. Citizens may not know what to do with a life line but the amplifier will carry instructions to them through smoke and above the fire ground noises.

The device also has value in connection with fire fighting operations. Directing fire fighters from a distance, or where firemen are located at remote

Photo Courtesy Air King Products Co., Inc.

Wire Recorder for Fire Service

This unit records direct from radio, telephone or phonograph on fine sensitized wire which can be "wiped" and reused at will. Spool of wire plays continuously for an hour. Provided with crystal mike for hand table or stand, and plug-in mike cord. Messages are erased automatically when recording over used wire. The unit is self-contained; in one piece chassis it weights 21½ pounds and measures 13¾ inches long by 12 inches wide by 9 inches high.

points, inaccessible to immediate contact, has already proved practical and effective, using voice magnification.

Men operating in exposed positions may be warned of building, floor or roof collapse, sudden surge of fire, or poisonous gases. When immediate changes or shifts in the fire fighting forces are desired, particularly where large structures are involved, the good voice amplifier enables the officer in command to get the necessary orders to fire fighters with least delay.

Fires in railroad yards, lumber yards, petroleum storage farms, and on piers and wharves necessitate dispersal of fire forces, with consequent difficulty in maintaining liaison between units and the officer in charge. Radio, of course, helps to knit the widely scattered units —but radio is not the vehicle for broadcasting orders and instructions over a wide fire front. This is the task of the power amplifier.

The Army, before embarking on an operation, briefs the officers and men. Fire department briefing, on the other hand, must take place during the emergency. No one can foretell the progress of a fire, nor what developments may occur during its progress. For that reason, the officer in command must be in a position to continue instructing men if he is to obtain most efficient fire extinguishing operations. It is in such case that the voice amplifier should prove valuable.

It is common experience that when a fire involves a large ship at a pier considerable difficulty is encountered in coordinating the efforts of the fire fighters. Inability of a chief officer to cover all points of the ship while operations are taking place, makes for inefficiency. Where hose stretches are long and it is necessary to get instructions to the pump operator from the nozzle, unless there are radio communication facilities available for the task, the voice amplifier is the only hope of efficient communication. The loudspeaker is also priceless in the event it becomes necessary to evacuate a ship. It is reported the Coast Guard makes excellent use of it in all its fire fighting operations.

Voice amplifiers are a valuable communications aid in fighting fires on airports where large hangars may be involved or where crash fire operations are conducted some distance from the administration building or fire headquarters (not all aircrash fire fighting forces have two-way radio).

The possibilities of voice amplification are illustrated by fire fighting operations involving grain elevators and flour mills. When fire involves an elevator it usually travels up through shafts to the top of the structure and fire control operations frequently must be carried on at high points. With the danger of explosions always present in such occupancies, it is necessary to insure safe retreat of men and this in turn hinges upon rapid transmission of warnings and orders.

Another application is in combating forest and brush fires. In such operations the fire fighting forces are constantly moving and the rate of fire travel may be relatively high. Operating units may, and often do, get out of touch with each other and find themselves in a precarious position. The voice amplifier is invaluable for enabling units and groups to maintain contact and keep out of danger. It can be used with a plane or helicopter to direct broadscale operations, evacuate threatened areas, direct retreats, and so on.

Other Emergency Uses

Voice amplification has many applications besides that of fighting fire. It may prove an attribute in almost every kind of disaster, flood, hurricane, building collapse, riots, and in sudden emergencies where it is necessary to warn or instruct large masses of people. It should be on every disaster and emergency unit.

The record of its applications is a long one and includes everything from directing youngsters, helpless in a rowboat and about to be swept over a dam, on what to do, to warning an entire neighborhood of the possibility of an explosion due to leaking gas. In a number of cases this product has been successfully employed in preventing suicides, keeping crowds out of hazardous areas and in keeping order. It has also proved a boon in directing traffic during emergencies.

A field of application hardly yet explored is in connection with firemen's training. At one fire school the portable units were used as "traveling microphones" to pick up and relay questions from the floor to the discussion leader. A number of fire departments regularly make use of voice amplification (both portable and mounted types) on the drill and training grounds. Drill tower, and aerial and scaling ladder evolutions are simplified when the instructor has the voice amplifier.

As out-of-door training-by-doing (extinguishing actual fires) increases, some form of effective directional voice magnification is highly desirable. Where advisable, the mounted type system can be permanently located at the school. A number of departments have hired commercial sound trucks upon special occasion for use in parades, tournaments, or training. Not a few such organizations have spent enough money on such rental to more than pay for their own sound units.

Voice Amplifiers in Fire Alarm Communications

In the search for saving the "split seconds" in fire communications, previously referred to, at least one answer has been found in the application of voice amplification to fire alarm communications within the fire department.

The primary means of communication within the department has been telegraphy. Its simplicity insures reliability and facilitates permanent records of transmission. Doubtless it will continue to be the main reliance in handling intra-department alarm signal transmission for some time to come; however, opportunities for improvements in this system exist in the use of facsimile or teleprinters.*

The need for a faster and more flexible secondary means of communication within the fire service was first evidenced by the use of telephone networks within the department and more recently by the use of radio telephone for communication with mobile equipment.

Telephone communication within the department has certain disadvantages (as it has in fire alarm sending by the public). The first is that only one person receives the message at a given point. This presents a chance for human error, which is lessened if several people could receive the message simultaneously. The second disadvantage involves loss of

*From paper by Arthur Donovan, Gamewell Company, at IMSA meeting, Worcester, Mass.

(*Continued on page 741*)

Photo Courtesy American Tel. & Tel. Co.

Cincinnati Fire Department Uses Teletype

Section of Cincinnati Fire Alarm Bureau showing telephone board, foreground; dispatcher's desk rear. Teletype and transmitter are mounted on cabinet at far left in rear of dispatcher.

ARE SELF-SERVICE GAS STATIONS A DANGEROUS INNOVATION?

Experience at San Diego, Calif., Indicates No Undue Hazard Is Created

By Chief G. E. Courser*

ABOUT the latter part of December, 1947, we received a request for a permit to install tanks for gasoline storage in connection with a so-called self-service station. We had heard that a number of these stations were in operation in Los Angeles County and in Long Beach, but this was the first attempt to invade San Diego. Our first reaction was that the handling of gasoline by women, teen-agers, aged persons, and even possibly by drunks would be a dangerous thing. Accordingly, the permit was refused and we heard no more on the subject until the early part of 1948, when almost simultaneously three applications for self-service permits were received.

Again the requests were denied, but two of the applicants were quite persistent in their demands for a permit, one of them making almost daily visits to headquarters demanding that we show cause why he should not be granted the desired permit.

In the meantime we began to examine our position, particularly with respect to our right to deny the permits that had been requested.

In our search for information we learned that a National Fire Protection Association committee in a report on the question of self-service had recommended in effect the prohibition of self-service stations, but that this recommendation had been withdrawn at the request of the committee pending further study of the matter. Our local ordinance governing the use, storage, and handling of flammable liquids contained no provision that would substantially support our stand against self-service, with the possible exception of a section that gave us authority to deny a permit for any installation of flammable liquids storage tanks, if, in our opinion, the proposed installation might tend to be dangerous or unsafe or liable to cause fire. Our City Attorney's office advised that while we might stand on this provision and have the issue settled in court, should we be challenged, the strength of this provision was doubtful.

At this point the attorney of one of the applicants served us with a verbal notice that if his client's application was not approved he would obtain an injunction compelling us to show cause why it should not be granted.

Since it was our feeling by now that we could not successfully answer any such court action, we agreed to the granting of a permit on condition that the permittee meet certain requirements, some of which were not covered specifically by city ordinance.

Briefly, these requirements were as follows and are herewith listed in two groups, first, those covered by existing laws, and second, those that we felt were essential for reasonably safe operation of this new type of service station.

In the first group was the requirement that the permitted underground tanks bear the Underwriters' Label or be built to equal standards, that piping, vents, dispensing equipment, etc., meet material quality and installation standards generally accepted by the industry, that the customary "No smoking" and "Stop motor" signs be posted, and that first aid fire fighting equipment be provided.

The second groups of requirements were that only "safety-fill" or pressure release type nozzles be used, that a male attendant be on duty at all times, but no roller-skating money collectors be permitted, and that no coin-in-the-slot dispensing equipment be installed. Applicants for permits readily agreed to these conditions and self-service came to San Diego.

It is now almost six months since the first self-service station opened in our city and we have had no difficulty with it or at any of our stations. There are approximately 30 of these stations in operation as against around 687 of the regular service stations.

We have watched the operation of these stations rather carefully and have observed no incidents that tend to cast doubt upon the wisdom of our decision to permit this type of station.

As a matter of fact, it appears, on the basis of a survey concluded last week, that self-service might even be safer than the operations of orthodox service stations.

We made a spot check of 35 stations, picked at random, and representing 31 regular stations selling products of 6 major oil companies, and 4 self-service stations.

The operators of all of these stations were told that we were making an informal check and that the information we were seeking was to be used solely for study and comparison and not for purposes of condemnation or criticism. The results of this poll are extremely interesting.

The regular service stations averaged 90 cars per day, with an average of 6.8 gallons sold per car, and spill overs were reported as averaging better than 1 for every ten cars served.

On the other hand, the self-service stations reported sales to an average of 862 cars daily, with 6.7 gallons per car, and with only a rare spill over, and that generally when a customer withdrew the nozzle and attempted to fill the tank right up to the top of the fill pipe, thus not giving the safety fill nozzle a chance to shut off when maximum tank capacity was reached.

It is interesting to note that many of the operators questioned in regular service stations were men who had operated service stations for as long as 12 years. That they were experienced operators is unquestioned, yet with their experience they indicated spillovers at least once in ten fills, and as high as 4 in 10 with 20% to 30% of spill overs being common.

While these figures are not necessarily conclusive, they nevertheless do throw an interesting light on the subject. The hazards predicted because of the handling of dispensing equipment by women, drunk and incapacitated or incompetent persons has not materialized, and on the other side of the ledger, the professional service station operators appear to be the ones who have the spill overs that potentially are trouble breeders.

It is my belief that one of the principal reasons for the low spill over record in self-service stations is that the man who owns the car is less likely to take a chance with his property than is the man who is merely servicing the car. Secondly, there is no doubt that the use of safety-fill nozzles has cut down the spill-over frequency that might otherwise occur if the usual type of nozzles were used.

In reaching the decision to go along with self-service, it was our opinion that it was not gasoline but the people who use it or misuse it that cause trouble. We felt, and we still believe, that if we can control the situation we can achieve a reasonable degree of fire safety. Our logic here, we think, is borne out by this comparison. Tobacco, in its many forms, can hardly be called volatile or flam-

*Fire Department, San Diego, Calif. Paper presented before Annual Conference of the League of California cities, Long Beach, Calif., Sept. 20, 1948.

A Self-Service Station in San Diego, Calif.

mable, and its use has been promiscuous, uncontrolled, and universally widespread and smoking in bed, for example, is responsible for the loss of hundreds of lives each year as well as for staggering property losses, and yet, to my knowledge, the loss of life and property in service station fires is extremely slight.

In other words, tobacco, which, at best, we control but very little, is a far greater threat to life and property than is the dispensing of gasoline at service stations over which we have exercised the most rigid controls.

We are quite satisfied with our experience with self-service stations, and if the coming months bear out what we have seen in the past, our conclusion will only be strengthened—that the self-service station presents no special hazard, in fact, may even be safer, particularly if reasonable and logical controls are exercised.

COLUMBUS PLANS TO RETURN TO FIFTY-SIX HOURS PER WEEK

Poll Conducted in Department Shows Great Majority Favor Fifty-six Hour Week Over Forty

By Walter G. Strickfaden
Chief, Columbus, Ohio

BEING one of the few fire departments in the country working a 40-hour week, I have received numerous communications asking why I have requested a change in hours from 40 to 56. We have worked under this system for almost a year and I believe an explanation of our experience would be of interest to all departments. I know it sounds foolish for anyone to ask to work 16 hours a week longer than he has to, but when shorter hours disrupt the efficiency of a department, then longer hours have to be adopted.

About four months ago I was promoted to Chief of the Columbus Fire Department. I was pretty much on the spot for I inherited a department in which there was much dissatisfaction due to the 40-hour work week voted in by the people of the community at the instigation of a minority group in the department.

In order to function properly I believe an organization should have satisfied employees and not members who are continually finding fault and blaming everyone but the one responsible for the working conditions that exist.

Local No. 67 of the International Association of Firefighters held various meetings in an attempt to arrive at a solution satisfactory to the majority, but it was to no avail. I attended two of the meetings and explained to them just how far the Chief could go to remedy the difficulty.

Finally I decided that inasmuch as there were also non-union men in the department who had not had an opportunity to express their opinion, as they were certainly entitled to do, I would cause a secret written ballot to be taken throughout the entire department. Ballots were printed stating clearly the issue: "I am in favor of working 24 hours on duty and 48 hours off duty." "I am in favor of continuing to work 40 hours per week." There could be no doubt in anyone's mind what he was voting for.

The result was 381 voting out of a possible 472. Of that number, 350 voted for 24 hours on and 48 hours off and 30 voted to stay on the 40-hour week. One voted both ways. However, the desire of the majority was definitely indicated.

Local No. 67 had petitions printed and distributed to firemen and their friends for the necessary signatures. These signatures have been secured and at the coming November election we hope to receive a further vote that will enable us to put the new system in effect.

Many have asked what the advantage of the 56 hour week would be over the present 40 hours.

First of all, each company, in order to have 5 men on duty on each platoon, should have a total of 21 men under the 40-hour week. Under the 56-hour plan there will be no extra days off and except in case of sickness or vacation the same men will be on duty. This will make a more efficient company and a better unit. Only 15 men would be needed, which is 6 men less per company than under the present 40 hours. On the basis of 16 pumps, 7 trucks and 1 fire squad, we would save 144 men, which in dollars would mean $412,416.00 per year.

Also, as a matter of convenience, the men on duty would eat and sleep at the fire station on regular schedule, which at present they are unable to do.

With present personnel we could reestablish the department as it was previous to the installation of the 40 hours and place back in service 3 pumps, 1 truck and add another emergency squad car. The strength of the department would then be 24 fire companies of 3 platoons each, or a total of 72 platoons.

We have 50 hydrant districts. By assigning a platoon to a district we would have 22 platoons performing more frequent and efficient inspections of buildings.

When the 40 hours went into effect we had manpower sufficient only for a 2 platoon system and so we were compelled to reduce companies to the extent of 7 pumps, 3 trucks and 1 emergency squad. We had left in service 9 pumps, 4 trucks, 1 fire squad and 1 emergency squad.

The Civil Service Commission tried to establish an eligible list, but it was impossbile to get applicants to build up our department to its needed strength. The few who did apply received provisional appointments until there were enough to justify the Commission in holding an examination.

Another question that has been frequently asked regards the attitude of the Administration on this situation. I am happy to say that only the finest and wholehearted cooperation has been given us by the Administration. At no time have they interfered with the operation of the department.

In writing the ordinance for the 56 hours, the City Attorney's Office has given consideration and study to every contingency for the protection of all concerned and the Chief of the Fire Department has the right at any time to place on 40 hours such members as he may see fit such as office personnel, fire alarm operators, fire prevention inspectors and maintenance men.

With the fire service at this new low, the National Board of Fire Underwriters promptly sent a committee to make a survey. The survey was only partially completed in anticipation of the new system and to give us an opportunity to "get our house in order." However, they did place us in 5th class, but with no penalties. I am sure the 56 hours will correct this status and we will be returned to our former 4th class rating.

This, in brief, is a resume of the fire service as it exists in Columbus. From the number of inquiries we have received from various cities throughout the United States I felt it might be of sufficient interest to have it brought to the attention of fire departments through the medium of FIRE ENGINEERING. In seeking and accepting a longer hour week, we have but one thought in mind, and that is a more efficient department. It is the desire of the majority to put into operation a system that will work definitely for better fire service in the city of Columbus.

New Extinguishing Agent Patented—Uses Castor Oil

Patents have been issued covering a new fire extinguishing fluid, in which castor oil is a major constituent, to control metal fires, has been disclosed by the United States Patent Office.

The new fire fighting agent, it is reported, is designed for use primarily in factories and machine shops in the automobile, aircraft and armaments industries where magnesium and aluminum are used extensively and where special hazards are created by shavings, cuttings, chips and powder grains from these and other combustible metals which catch fire easily and burn violently.

The patents were issued to Michael O. Ferris of Eagle Rock and Richard B. Gottschalk of Burbank, Calif., and assigned to the Lockheed Aircraft Company.

The new extinguishing agent is in the form of a fluid composition which, the inventors say, may be employed effectively under substantially all conditions to extinguish metal fires. Sprayed from the tank of a fire extinguishing apparatus, this fluid, comprising a mixture of castor oil and dispersed carbon dioxide gas in sufficient quantity to form a fluent foam, is said to have been successfully employed to penetrate quantities of burning metal cuttings, smother the flames and cool the remaining metal and the products of combustion.

NOVEL FIRE SHOW REPEATED AT ILLINOIS STATE FAIR

Provides Effective Means of Spreading Fire Prevention Information; Proves Center of Interest

THE Second Annual "Fire Show" at Illinois State Fair, Springfield, August 13th to 22nd, was again the major educational exhibit on the Fair Grounds. Presented by Illinois State Fair Fire Prevention Exhibit Association, and sponsored by the Illinois Association of Insurance Agents; Illinois Inspection Bureau; State Fire Marshal's Office; Underwriters' Laboratories, Inc., (Chicago); and Western Actuarial Bureau, the "Fire Show" was an outstanding success.

The Show held forth in an especially made, orange colored fireproofed tent 60' x 60', with 10' side walls, and was prominently located in the center of all Fair activity. The exhibit emphasized fire hazards common to home premises, and suggested various means of providing better protection. Ten specially constructed tables 12' long, and various widths, painted a fire engine red, with buff colored back-boards and wings 4' high held the exhibits.

Table I displayed a specially constructed miniature of a dwelling, mercantile or factory building, grain elevator, etc., for lecture and demonstration purposes, on which every conceivable fire hazard can be produced.

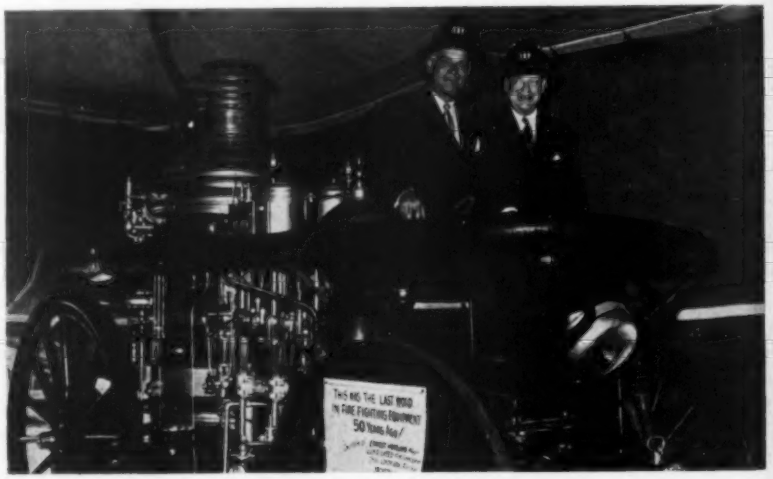
Table II dealt with "common hazards" — a toy wood ironing board with an electric iron which had been burned through it in 52 minutes attracted considerable interest; also "matches" to be kept out of children's reach; window curtains too near an open flame stove; a safe trash burner; metal basket for ashes; metal can with tight fitting lid for oil mop heads; floor protection for cooking range; and a defective flue.

Table III actually produced "lightning"; by means of a static machine 100,000 volts was generated. Exhibited and staffed by Independent Protection Co., Goshen, Indiana, this exhibit was a distinct asset of our Show. At frequent intervals demonstrations were conducted with lightning actually setting fire to improperly protected miniature buildings. A miniature farm layout against a back-drop with a constantly flashing streak of lightning attracted attention.

Table IV featured equipment designed to aid firemen, including first aid items. All Service Gas Mask; Chemox Oxygen Breathing Apparatus; helmets; explosimeter; safety lamp; and assorted sizes of first aid kits.

Table V featured electrical installations both good and bad.

Table VI was assembled and staffed by Underwriter's Laboratories, Inc. (Chicago), and had for display an interesting array of photographs showing various testing methods used in the Laboratories.



Old Steamer Featured at Second Illinois State Fair Fire Show. Governor Dwight H. Green (Left) and Fire Marshal John H. Craig (Right) in the Driver's Seat

THIS EXHIBIT PRESENTED to ILLINOIS STATE FAIR VISITORS PURELY IN THE INTEREST of PUBLIC SAFETY and FIRE PREVENTION
SPONSORED by ILLINOIS ASSOCIATION OF INSURANCE AGENTS
ILLINOIS INSPECTION BUREAU
ILLINOIS STATE FIRE PREVENTION ASSOCIATION
STATE FIRE MARSHALS OFFICE
UNDERWRITERS LABORATORIES of CHICAGO
WESTERN ACTUARIAL BUREAU

At the Illinois State Fair Fire Show Are from Left to Right: Abe Gent, Illinois Inspection Bureau; Don Bretting, Underwriters' Laboratories; John E. Hutchins, in Charge, Visual Education, Fire Marshal Office; Governor Dwight H. Green; A. C. Schilke, Illinois Association of Insurance Agents; John H. Craig, State Fire Marshal; and Herbert A. Elkin, Secretary, Illinois State Fire Prevention Association

Table VII displayed practically every type of approved hand fire extinguishers and emphasized first aid for Class "A," "B" and "C" fires.

Table VIII again presented our "cemetery" with every tombstone epitaph stating what fire hazard placed the occupant there.

Table IX displayed relics including leather water buckets, and leather hose, some 175 years old, loaned by Peter Pirsch, Kenosha, Wis., and Fire Chief George Simon, Quincy, Ill.

Mounted on a turn-table was a miniature combination pumper, hose and ladder truck 43" long, with all essential accessories and capable of operating—a real engine.

Table X featured "Fireproofed" and "Flameproofed" materials including: paint, canvas, fiber-glass textiles, paper and wood. A blow-torch was used to demonstrate effect of fire and heat on these materials.

The "Fire StadT," an approved fire alarm system for installation in home or small business was shown and demonstrated. It is manufactured by Fire StadT Co.

Other items in the tent which attracted more than usual attention, included:

1. The 109 year old hand drawn and hand operated water pump, called the "Water Witch," formerly used in Quincy.

2. The "John R. Davis," a 50 year old horse drawn LaFrance steam pumper, recently a stand-by piece of equipment belonging to the Jacksonville Fire Department, and regularly used up to about four years ago. The Jacksonville City Council by Resolution adopted on August 16th, 1948, presented the "John R. Davis" engine to "People of the State of Illinois, for historical and educational use, etc."

3. A "Hay Probe" was on display. It is a gadget to be made at home and is fashioned out of an appropriate length of 1½" pipe, with point and vent holes in one end, a cross-arm handle at the other end. Temperature readings in middle of a hay-stack, or mow, is obtained by inserting a dairy thermometer into the hollow pipe and "boring" to the center of the stack. A reading of 140 degrees indicates the hay is in a dangerous stage.

4. A modern city pumper engine capable of delivering 500 g.p.m., 2 stages, mounted on a 1945 Mack chassis, equipped with 1350 ft. of 2½ in. hose, 400 ft. of 1½ in. hose, and 200 ft. of booster hose, was another attraction in the tent.

An exceedingly decorative item, conceived by Fire Marshal Craig, was a revolving wheel divided into eight parts with only the two upward parts being visible, and each section reciting downstate Illinois experience in number of fires, number of lives lost, and monetary loss in the following classifications: Rubbish and Litter; Lightning; Chimneys, Flues and Sparks; Stoves, Furnaces and Ashes; Petroleum and its products; Matches and Smoking; Electrical Fires; and Other Causes.

During the 10 day run of the Fair, more than 200,000 people visited the "Fire Show"—over 35,000 attended on American Legion Day, Sunday, August 15th. Over 155,000 pieces of general fire prevention literature, and 4,500 pieces of special literature were distributed.

Westchester Co. Holds Training Institute

Over 3,500 firemen, or an average of better than 800 nightly, attended the Second Firemen's Training Institute, sponsored by the Fire Chiefs Emergency Plan of Westchester County, New York, September 21 to 25 inclusive. If the attendance at the all-day, out-of-door fire demonstrations of Saturday the 25th were included, the total would exceed 5,000 because fully 1,500 members of the County's fire service were on hand to stage the largest single session of "training-by-doing" thus far held in the country. Fully 2,500 citizens and friends of fire fighters also were spectators.

The four evening sessions were held in the auditorium of the White Plains High School, White Plains, N. Y.; the field trials were conducted at the County Center parking pavillion. Apparatus and crews from thirty-five companies participated in the operations, which were under the general direction of the White Plains Fire Department, Chief Abbott Griffen. The entire field day was in charge of Deputy Chief Edward MacDonald and other officers of the White Plains department, with Chief Paul P. Heinz acting as master of ceremonies at the "mike"; Deputy Chief Thomas Collins, of the New Haven Fire Department supervised the field burning trials, using crews made up of both paid and volunteer fire fighters.

Between 9:00 A.M. and 4:30 P.M. Sept. 25th, there were over 24 events staged in the exercises, most of them tests to evidence the latest methods of extinguishing various types of fire. These tests ran all the way from burning an airplane, a tank wagon, two large wooden shacks, a transformer and other electrical equipment, to a series of Class B fires in large and small pits. Fog, fog-foam, foam, dry powder, CO_2 and high pressure water streams were used on every type of fire, including creosoted cribs, propane, benzine, kerosene and gasoline. A series of fires were extinguished by treated water. Each event was in reality, an illustrated lecture, being accompanied by a "blow-by-blow" description of operations.

Between the burning events, exhibitions were given of life net holding and jumping, ladder and hose operations, demonstrations of the newest in modern fire fighting apparatus and equipment, including extinguishers, nozzles, stream shapers, etc. A feature was the showing of the latest in tanker trucks, spearheaded by the unit from Newington, N. H., developed by Chief John Holden.

Outstanding Curriculum

The nightly lecture sessions were directed by Chief Roi Woolley, assistant editor, FIRE ENGINEERING, general chairman of the Institute. The speakers included Fred Shepperd, Editor of FIRE ENGINEERING, discussion-leader for the opening Panel who took for his theme: "Problems That Face the Fire Service." Participants included former Chief Harold Burke of New York, Chief Paul P. Heinz of New Haven; Edward Kehoe, Fire protection engineer, U. S. Atomic Energy Commission; Chief Henry Thomas, Hartford, and others.

Wednesday's session included lectures on "Ventilation," by Chief James J. Deasy; "Controlling Electrical Fires by W. E. Rossnagel, Fire Protection Engineer, Consolidated Edison Company, N. Y.; and a dissertation on the "modern" fire department, by Chief James W. Just, director of fire service training, Maryland University.

The entire Thursday session was devoted to the subject of arson, the panel discussion leader being George Clough, Fire Marshal, Nassau County, N. Y. Participants included E. A. Wakefield, General Manager, Fire Underwriters Investigation Bureau, Inc., Montreal, Que.; Capt. Ross V. Urquhart, Connecticut State Police and Brendon P. Battle, investigator, National Board of Fire Underwriters. Numerous police and fire officials entered into the discussion.

Chief John Holden, Newington, N. H., headed the final evening's session, speaking on "the Small Town Fire Department." The topic of modern fire service communications was covered by Herbert A. Friede, Supt. of Communications, Washington, D. C. Capt. Edward Curren, Underwriters Rating Bureau, Albany, spoke on "Codes and Ordinances in Fire Protection and Prevention."

All registrants paid a nominal enrollment fee and received a certificate of attendance upon certification of their fire chief. Many New York, New Jersey and Connecticut fire officers attended the nightly sessions, which ran from 8:00 P.M. until 10:45 P.M. Twenty-two concerns exhibited fire fighting equipment and apparatus at the School.

Participating in the program were all Westchester County fire service organizations; County and White Plains agencies — including police and Red Cross and civic and other groups.

B. Richter Townsend, president of the Fire Chiefs Emergency Plan, and a large committee supervised the extensive details.

One Evening's Panel of Lecturers at Westchester's Firemen's Institute

Left to right: Chief James W. Just, Director of Fire Service Extension, University of Maryland, College Park, Md.; W. E. Rossnagel, Fire Prevention Engineer, Consolidated Edison Co., New York City; James J. Deasy, Battalion Chief, New York Fire Department (Ret.), Greenville, N. Y.; Chief John Holden, Newington, N. H.

New Fire Training Film

A new motion picture film dealing with hose evolutions and hose line equipment has been recently announced. It is the current project of the Ohio Fire Chief's Association and the sponsor, the Wooster Brass Company, manufacturers of hose brass goods.

"From the beginning," reports Bill Ferrie, President of the Ohio Fire Chief's Association, "members of our Association and representatives of the Wooster Brass Company felt that a film of the training type would serve as a valuable aid to instructors and fire departments all over the country."

John C. Schellin, President of the Wooster Brass Company, in discussing the project with the Ohio Fire Chief's Association, said, "Our company, in undertaking the sponsorship of this film, realizes that few, if any, training films are available to the profession. We hope that this film, made in cooperation with your Association, will become a useful tool for all firemen."

The picture is designed to show new recruits most of the more prevalent methods and pieces of equipment being used by firemen today.

Scenes have been photographed in a representative list of cities and towns to show the scope and numerous innovations in methods being used by Ohio firemen in their daily work.

In organizing the project, Chief Ferrie appointed a special film committee to guide the effort in regard to the interests of fire fighting personnel.

Chairman of this appointed committee is Chief Charles Bryan of East Liverpool and the other members of the committee include Chief Walter Hydaker of Lima; Battalion Chiefs Emmett Byrne and James Flynn of Cleveland; Chief Frank Vernotzy of Akron; Battalion Chief Thomas Brightwell of Dayton; District Chief Arnold Papenhagen of Toledo, and Chief M. W. Gifford of the Ohio Firemen's Association.

Handling the production and script details for the film is Austin Productions.

The committee of instructors guiding the script material include Battalion Chief Emmett Byrne of Cleveland; Dist. Chief Arnold Papenhagen of Toledo; Captain Gerald Vernotzy of Akron and Battalion Chief Thomas Brightwell of Dayton.

The Wooster Brass Company will make the film available on a free loan basis through its representatives in each state and through the Ohio Fire Chief's Association in Ohio.

The film, which is titled "Hose Evolutions and Hose Line Equipment" will be available for showings early in November.

Juvenile Arsonist Finally Caught

An example of the difficulties of detecting arson, and catching and convicting the fire setter is furnished by this terse report from Fire Chief Frank Burns, Grand Rapids, Mich.

On September 3, 1947, at 3:45 P.M., a fire occurred in a garage at 342 Paris avenue, Grand Rapids, resulting in slight damage. Origin of this fire appeared questionable and the fire department officials carefully investigated the circumstances, aided by detectives McPhilamy and McGraudy of the local detective bureau. This investigation resulted in the conclusion that the fire was set, probably by a child.

One month later to a day (Oct. 3, 1947 at 5:44 P.M.) a second fire occured in another garage, at 271 Paris avenue, under similar circumstances. Again the departments investigated. Their search continued, and in the following month, three more garage fires were reported, all on November 4, 1947. These were at 516 Cherry street, at 3:39 P.M.; 304 College street, 12:33 P.M., and the same garage at 304 College at 4:00 P.M. the same day. Here the evidence pointed to youthful depradations.

A month later, the 'torch' shifted operations to a type of risk that would be a bit more spectacular, a switch which incidentally narrowed down the search for the culprit. On Dec. 15, 1947, fire started in a grade school in the same district as the garage fires. This fire was clocked at 12:48 P.M. A few days later, another fire in the same school was discovered and extinguished. None of these blazes, Chief Burns reports, did extensive damage.

Then a fire was discovered in the Wealthy Street Baptist Church, a large wood constructed building. Fortunately, this blaze was detected and extinguished by the minister and janitor without the need of the department.

On March 17, 1948 at 4:17 P.M., a more threatening fire broke out in the basement of the Grand Rapids Art Gallery, which caused a loss of $600 and endangered the 100-year-old structure and hundreds of thousands of dollars worth of paintings. Here, again, evidence pointed to incendiarism.

By this time any lingering doubt which the officials had on the origin of these fires was dispelled and they had narrowed the search down to one suspect, a 10-year-old boy whom they were convinced was the guilty person. Nevertheless, all their questioning and presentation of evidence failed to elicit a confession. The youth was, in the words of Chief Burns, "a very shrewd and careful operator, keeping his activities well concealed."

The day after the Art Gallery fire, however, the boy was severely grilled by detectives, fire officials and members of the school staff. He then confessed to setting the fires, but only after he was searched and found to be carrying matches.

The irony of this case was the sequel. The physiology teacher, who represented the school in which the guilty youth was enrolled, completely exonerated the boy, stating that "he was the victim of a physical disorder which resulted in inward impulsions over which he had no control."

Chief Burns concludes his account with this observation. "We agree that the school authorities were most helpful and cooperative in their efforts to solve the problem, but we also feel that the manner in which the case was summed up by the physiology teacher in the presence of the boy cancelled most of the good accomplished through the boy's confession."

After discussing the problem thoroughly with the parents of the youth, who were very cooperative, the case was turned over to the juvenile authorities.

Participants in Fire Training Film Project

The major participants in the training film project are, from the left, front row: Chief Walter Hydaker, Lima; John Schellin, Wooster Brass Company; Chief Charles Bryan, East Liverpool; Battalion Chief Thomas Brightwell, Dayton; Richard Ewing, Wooster Brass Company; Battalion Chief James Flynn, Cleveland. In the second row, from the left: Ken Rearick, Wooster Brass Company; Captain Gerald Vernotzy, Akron; Chief Lloyd Eberhart, Wooster; Chief Battalion Emmett Byrne, Cleveland, and District Chief Arnold Papenhagen, Toledo. Absent members: Chief M. W. Gifford; William Ferrie; Chief Frank Vernotzy.

Idlewild Has First Fire

New York's vast new International Airport at Idlewild got its first baptism of fire Sept. 26th, and came off with flying colors, as emergency airport fire crews, municipal firemen and the airport control personnel functioned smoothly in the crisis.

The blaze, which broke out in a DC-6 being fuelled, much as was the case with the fire at LaGuardia the month before (FIRE ENGINEERING, September, 1948), was quickly extinguished by liberal applications of fog-foam.

One man who was caught aboard the plane by the fast spreading blaze, was taken to the hospital after jumping to the ground to escape the flames.

The cause of the fire was not immediately disclosed.

New Hartford Crash Truck Tested

A newly designed crash truck, which was built by American-LaFrance for Hartford, Conn., was given a comprehensive test at the proving grounds of the builders on August 24. The unit is designed to give protection for the buildings at the Hartford Airport as well as serve as a crash truck.

The experience of the Army Air Force was largely drawn upon for the basic design, which emphasizes four factors:

1. All wheel drive to permit off the runway operation in all types of weather.
2. Low flotation pressure to facilitate maneuverability on soft ground.
3. High performance characteristics.
4. Sufficient equipment to permit handling a crash fire facilitating the rescue of the personnel.

In addition to the above requirements, there was also the problem of supplying adequate water for Class A fires such as might occur in buildings on the field or adjacent areas where the truck might also be called upon to render assistance. The pump, therefore, was designed to have a rating of 750 GPM at 120 pound discharge pressure so that credit for its fire protection value would be issued by the National Board of Fire Underwriters.

To provide a maximum of utility the pump is operated by a motor directly connected to the pump and entirely independent of the motor operating the vehicle. This makes it possible to get the turret gun and the hand foam lines into operation before the vehicle comes to a stop. This feature is essential for fast action at a crash fire. It also permits the vehicle to be moved should a shift in the wind direction occur that might endanger the vehicle while fighting the crash fire. This movement can be accomplished without shutting down the nozzles or hand lines.

Vehicle performance is assured by a 204 H.P. V12 engine and pumping performance is provided by a 170 H.P. V12 engine.

When operating at a crash fire the pump is operated at 300 pounds pressure.

The turret nozzle has a straight 5/8 tip and discharges approximately 190 GPM per minute.

Two hand lines for foam application are provided, each line discharging 600 GPM. For this discharge each line requires 56 gallons of water per minute and 4 gallons of liquid foam.

The Air Corps have found from numerous tests that 90 seconds is the maximum time allowable for rescues if the personnel in the plane is to survive a fire. This time limit is established from the time the fire starts. For crash service it is, therefore, essential that this vehicle have high accelerating characteristics as well as high top speed and tests have shown ability to accelerate from a standing start to 50 miles per hour in 32 seconds. The top speed is 65 miles per hour.

The water tank carries 500 gallons of water and a liquid foam tank carries 50 gallons of foam.

In addition to the above, 300 pounds of carbon dioxide gas are carried on the vehicle in four 75-pound cylinders and are manifolded so that any combination of one to all can be discharged. A reel with 125 feet of carbon dioxide hose and a horn is also provided. Other miscellaneous equipment in the form of hand fire extinguishers, both foam and carbon dioxide are provided. The usual complement of ladders, axes, lanterns, are supplemented by first aid kits, gas masks and stretchers.

The gross vehicle weight with full

Top: Just as Crash Truck Arrived, and Turret Nozzle Was Put into Operation. Center: Foam Streams about ready to Go to Work. Turret Nozzle Stream Has Driven Fire Away from Fore Part of Plane. Bottom: Fire Out. Turret Nozzle Snut Down.

New Hartford Crash Truck.

equipment and five men is approximately 18,000 pounds.

In the test conducted by the builders, the purpose was to demonstrate ability to effect a rescue of personnel providing protection that would permit the entry of a rescue crew in the minimum possible time. An A26 bomber was used for the purpose of the test, so that the conditions would duplicate as closely as possible an actual service problem.

The ground around the bomber was first thoroughly wet down with water to minimize absorption of gasoline during the test. The conduct of the test was as follows:

The apparatus was stationed some distance away from the plane (several hundred feet) to allow a certain time-lapse that usually occurs before the arrival of the apparatus at a crash. At a signal, the 200 gallons of gasoline was dumped on the ground, which covered an area approximately 30 feet in diameter at the center of the plane. Valves were opened in lines from the gasoline tanks and in the wings so that gasoline was flowing from the wing tanks throughout the test. The gasoline was ignited and burned for approximately 15 seconds before the arrival of the apparatus.

Illustrations herewith show the technique of attack used and the progress of extinguishment. In the first test, as shown, a blanket of foam had been laid down affording adequate protection for a rescue crew in a time of 60 seconds from the start of the fire. This time was a little longer than on previous tests due to a 15 second delay on the arrival of the apparatus due to faulty throttle connection.

The time for total extinguishment of the fire was 2 minutes 24 seconds, quantity of water used was 400 gallons, and the quantity of liquid foam used was 19.2 gallons.

At the request of some of the visiting officials, a second test was run changing the tip on the turret nozzle from a 5/8 straight bore tip to a spray type nozzle. All the test conditions were identical to the first test except for this change. The results of this test indicated that a spray type nozzle on the turret requires very careful use of the nozzle to avoid an excess of water being mixed with the foam.

In the first test, after a path had been blasted through the flaming gasoline by the turret nozzle, the nozzle was used for its heat absorbing qualities and mostly over-shot the plane.

In the second test the spray nozzle was directed mostly against the fuselage of the plane to cool, rather than to use the water discharge from the nozzle as an umbrella for its heat absorbing qualities. As a result of directing most of the stream against the fuselage, the foam under the plane had a tendency to break down in the presence of excess water, and several flash backs occurred. This lengthened out the time for total extinguishment to 3 minutes 45 seconds for this test; total water used was 700 gallons; total liquid foam used was 33 gallons.

In summing up the results of the test, it was shown that this one crash vehicle is adequate to accomplish the rescue of personnel in a plane. It should, however, in all cases be backed up by auxiliary equipment capable of exercising some cooling effect on the opposite side from the fuselage or cabin from which the crash truck is working and also to aid in final extinguishment of the fire.

New York Fireman Killed in Smoky Cellar Fire

One fireman was killed and twenty others suffered various degrees of smoke poisoning in controlling a stubborn, smoky fire at 3-5 Washington Place, Manhattan, Saturday, July 1, 1948. The fire occurred shortly after noon on one of the most sultry, humid days of summer.

The dead fireman, Joseph Brecht, 35, of Engine 5, would have celebrated his tenth year with the New York Fire Department the Monday following the tragedy.

The fire building, of six stories, basement and sub-basement, had multiple occupancies and was used for storage. The first floor was occupied by the Betty Page Fabrics store. The basement was used as storage by Jacob Elishewitz & Sons, straw hat manufacturers. The sub-basement was occupied by the Advance Toy and Game Company. Most of the damage, which was reported as considerable, was suffered by the latter two concerns.

According to Fire Marshal Thomas P. Brophy, the fire had evidently been smouldering for some time, possibly all night, before it was discovered and the fire department notified. There was no watchman service in the building, but the basement was protected by a thermostatic fire alarm system.

The first notification (automatic) was reported at 12:09 P.M., and a few seconds later went to Manhattan firehouses as signal 3-387-25, indicating a fire on the premises of 3 to 5 Washington Place, just off Broadway. This was followed at 12:11 by a box alarm from signal station 387, Broadway and Washington Place. The chronology of signals and response follows:

12:09-10 Automatic alarm to private company
12:00 Signal 3-387-25 for building at 307 Washington Place. Engine 33, Ladder 20
12:11 Box 387—Engines 72, 13, 5; Ladders 20, 3; Rescue 1
12:31 Call for F. D. Ambulance
12:35 Second Alarm—Engines 18, 14, 55, 28; Ladder 9
12:36 Special call for Engine 24
12:51 Special call for Rescue Squad
12:48 Third alarm—Engines 30, 31, 17, 11; Ladder 5
12:59 Special call for Engine 16

In the words of a seasoned officer at the scene, it was obvious the fire had been "cooking" for some time. It was a case of getting to the fire, or its getting through the building. Once the blaze had extended above the first floor

Photo by still Herries

Scene of Cellar Fire at Which One New York Fireman Lost His Life and a Score of Others Were Overcome

there were all the potentials for a conflagration. And it was in this strenuous effort to penetrate the choking smoke and reach the heart of the fire that most of the men were knocked out.

The first call for additional help was dispatched by Acting Deputy Chief McPartland; the third alarm was sounded by Deputy Chief of Staff and Operations, E. M. F. Conway, acting in charge of the department at the time.

The fire was localized in the basement, but threatened the rear of the first floor almost before the arrival of fire fighters. The first arriving crews dropped a straight ladder down the elevator shaft and took a line down it to the basement floor. Other firemen attempted to work down the only two stairways leading to the cellar. All of these men took heavy punishment and were forced to back out.

The crew of Engine 5, which had made the basement floor via the shaft ladder, was ordered out and it was in this operation that Fireman Brecht was overcome and toppled off the ladder. In his fall he is believed to have been injured when he struck the steel curved overhead member of the elvator, which was located at the basement level, and dropped through an opening into a space between the elevator shaft and wall, which contained some water.

His fellow firemen quickly discovered that Fireman Brecht was missing and effort was at once made to locate him. Members of Rescue 1 with self-contained oxygen masks penetrated the basement and brought him out. Initial reports were that he had drowned in basement water, but this was later discounted. Fireman Brecht died despite all efforts of members of the department's inhalator and first aid crews, and department and other medicos.

U. S. Charts 50-Year Atomic Defense

A 50-year defense program has been drafted by the United States high command, it was disclosed early in October. The plans are based on the belief that Russia will have the atomic bomb by 1952 and that continent-jumping rockets will be ready by 1977.

Army, Navy and Air Forces believe atomic age defense needs will develop in three civilization-threatening phases during the next half century. They will ask the next Congress for $15 billion to spend on the first defense phase in 1950.

The three phases are (1) From now until 1952, when Russia will have the atomic bomb and, while our nation can develop overwhelming superiority in the air and at sea, we'll have difficulty competing with the Soviet land power.

Phase 2, from 1952 to 1977—the critical period, with Russia and perhaps other countries developing atomic weapons and long-range strategic air forces capable of bombing the United States.

The third phase, from 1977 on; the Chiefs of Staffs expect development of intercontinental rockets equipped with atomic warheads, airplanes traveling several times the speed of sound, gas clouds, and possibly death rays and other fantastic weapons. This is the period, experts believe, when civilization will be in danger of annihilation.

Basic decisions for the three phases have been made by the joint chiefs and assigned each service its fundamental defense tasks.

Fire Plays Return Engagement

Twice within a period of about two months the small Wisconsin community of Richland Center, with less than 5,000 population, was visited by destructive fires to the extent of $400,000 in direct fire losses.

The first blaze in April, 1948, destroyed the 100×66 ft. Keegan Feed Mill, a two-story landmark, resulting in a $100,000 loss. Local firemen, augmented by aid from nearby Muscoda and Lone Rock, were unable to subdue the fast-spreading flames and, as the mill became involved, concentrated their efforts in preventing the extension of the fire to other properties. The cause was attributed to spontaneous ignition.

The second visitation occurred early one morning in May. A resident of a house across the street from the property detected smoke issuing from the north end of the structure and notified the Center Fire Department.

It was soon apparent that help would be needed by the local fire fighters and again Muscoda and Long Rock firemen were summoned by the Richland Center Chief. Again it was largely a job of protecting exposed properties while the flames raced through the 75×150 ft. structure. The three-story brick section of the store collapsed within an hour and soon after, two one-story sections of the building fell in.

Fire fighters were endangered by thousands of exploding ammunition cartridges during the blaze. Large crowds of spectators watched the struggle against the fire and one spectator, a woman, suffered a fractured arm when she became entangled in a hose line when it was moved by firemen to a better vantage point.

The store, housing eight departments and the offices of the Krouskop Company, was Southwestern Wisconsin's largest store. Damaged also was the Eskin Theatre and Crystal Cafe, adjoining, while windows across the street for half a block were broken by the heat from the fire.

The fire, which, according to reports,

Wisconsin Community Suffers Heavy Loss in Two Fires

Fire in Feed Mill (top), historic landmark of Richland Center, Wis., is costly prelude to destruction of Kronskop's General Store (bottom). View shows one-story section of the 75 by 150 foot store, largest in Southwestern Wisconsin.

kept firemen on the job from Friday until Sunday morning, was the worst in the history of Richland Center. The cause was listed as unknown. A press report said that several roof fires were kindled some distance from the big fire by flaming brands.

CHIEF ROD PORTER

International Mutual Aid

The towns of Calais and Milltown, Me., and St. Stephen and Milltown, N. B., adjoin one another, separated only by the narrow St. Croix River and the International Boundary between Canada and the United States.

This boundary is non-existent when it comes to fire fighting. There is no stopping at the customs and immigration station when an emergency call goes out for mobilization of joint fire control forces. Then the mutual aid running card may call apparatus to respond from both sides of the border, with half a dozen companies swinging into action without delay in any of these small towns.

On July 14, 1948, fire was discovered in the basement of the new Methodist church in Calais, Me. Starting directly beneath the belfry, the fire spread through partitions of the building and smoke was pouring from every section of the structure when first firemen arrived under Fire Chief Harry Tracey of Calais.

Calls for help to the "international group" speedily brought fire fighters and equipment from the other three towns, St. Stephen and Milltown, N. B., and Milltown, Me., and this mobilization soon had the fire under control. The fire did not reach the main body of the recently redecorated church but there was considerable smoke and water damage.

The spirit of reciprocal service was further exemplified when the Canadian contingent departments joined the recent Fourth of July parade in Calais, together with six neighboring departments. The Americans go across the border, likewise, to help celebrate Dominion Day, in St. Stephen.

DONALD BAIRD

The Sprinklers Came Too Late!

Six persons were injured, one a fireman, in a flash fire on August 4, which levelled the main building of Hicks and Otis, Wilton Avenue, Norwalk, Conn., manufacturers of cellulose and plastic products, causing damage estimated at $500,000.

Five of the Company's 50 employes received first and second degree burns and were taken to Norwalk hospital. Frank Falasca, 27, a member of the Norwalk Fire Department, received a back injury when a fire hydrant coupling blew off and struck him.

Otis Ross, plant foreman, said the fire originated in the production room about 7:15 A.M., ten minutes after the machinery was in operation. He said the fire started under a waterproofing compound, which consisted of naptha and wax.

The machine had been in use about two months and was of the latest design, supposedly fireproof, Mr. Ross said. The Company, which has occupied the building, completed last October, is currently engaged in completing a subcontract for the manufacture of 1,000,200 yards of web belting for a New York City firm.

Employes, using carbon dioxide fire extinguishers in the plant, quickly cut off the fire from a neighboring plant room and laboratory where 50 drums of paint and naptha were stored, and confined it to a six foot area. However, when the fire reached the roof it mushroomed and soon the entire roof and portions of the concrete block walls collapsed.

Frederick Hicks, President of the Company, told fire officials that a contract for the installation of a sprinkler system had been signed the day before the fire. Mr. Hicks estimated the blaze caused $100,000 damage to the 30,000 square foot concrete block building, $100,000 to machinery, and $300,000 to the stock.

TOM MAGNER

"New Look" in the Columbus Fire Department

As of September 1, 1948, Chief Walter G. Strickfaden of the Columbus, Ohio, Fire Department, ordered the entire fire fighting personnel into a new uniform and top coat. This is the first major change in the fireman's uniform since the days of the horse-drawn equipment and it was greeted with enthusiasm by the entire department.

The old uniform was of heavy 18-ounce all-wool cloth, which is too heavy for modern day usage. The fireman's coat was single breasted, while the officers wore a double breasted coat, and this entailed additional expense upon promotion.

The new uniform is an all-wool 16-ounce blue serge double-breasted coat, alike for all members, and is of modern design patterned along the same lines as a regular dress coat. The fireman's coat is trimmed with silver buttons while the officers wear brass. The top coat is of the same weight cloth, double breasted, with belted back. Officers' caps are of the same cloth with bell top, while the fireman's cap is of the same cloth but with an 8-point crown.

The Old and the New in Columbus Uniforms

To make the picture still brighter the fire fighters now receive clothing reimbursement of $150 for new fire fighters and $75 annually thereafter for the older men. This has increased the pride of personal appearance and has definitely been a morale booster throughout the entire department.

Queer Accident Blocks Apparatus Response

A rare accident kept one of the ladder trucks of the Rochester Fire Department, Rochester, N. Y., from responding to an alarm of fire one night last month.

The apparatus is located in the quarters of Ladder 8 and is a city service trailer type with tiller, built on a chassis by the local department during the lean war years. It is scheduled for replacement by a new 65-ft. aerial (which event will mark the passing of the last of the city's old service trucks).

As the apparatus started out of its quarters on Ridge Rd. west, the automatic door of the station failed to go up as far as it should. The tillerman noticed the low-hanging door and signalled the driver who immediately stopped the truck, but not before the door had smashed the rear windshield on the trailer.

According to Fire Chief John Slattery, no one was hurt in the affair but the sudden stop jammed the steering apparatus of the truck, making it necessary to send another company to the fire which destroyed a small workshop at the rear of the Rochester Gas & Electric Corporation's new plant in Beach avenue.

Six Persons Were Injured and Damage Estimated at Approximately $500,000, Was Done when Fire Leveled the Plant of Hicks and Otis, Plastic Products Manufacturers, at Norwalk, Conn., on August 4.

Manufacturers' Announcements

Mack Pumper on New Stamp

Honoring the 300th anniversary of the Volunteer Firemen in America, the United States Post Office Department has issued a special commemorative stamp. Bearing a likeness of Peter Stuyvesant, organizer of America's first volunteer fire department, and with drawings of an old hand pump and a Mack Type 85 pumper flanking the portrait, the stamp was first placed on sale at Dover, Delaware, on October 4th, the day set for the celebration of the anniversary.

Mack Pumper, the Likeness of Which Appears on New Postage Stamp Honoring the Volunteer Firemen

The Mack pumper was selected as a model by the Government Stamp Designer from an assembled group of over 50 photographs. It is owned by the Riverdale, Md., Fire Department, and will be part of a parade to be held in Dover, October 3rd, which will jointly celebrate the anniversary and the housing of a new Mack pumper recently purchased by the Robbins Hose Company, Dover's volunteer fire department.

J. G. Howland Named to Advertising Post

Appointment of Joseph G. Howland as advertising and sales promotion manager for Motorola, Inc., Chicago radio and television manufacturing firm, was announced recently by Paul V. Galvin, president.

Widely known as an advertising executive for the past 20 years, Mr. Howland recently resigned as director of advertising for the Domestic Appliance Division of Pressed Steel Car Co., Inc., Chicago, manufacturers of Presteline electric ranges. He had occupied that position for the last three years.

National Foam Acquires "Drench"

National Foam System, Inc., Philadelphia, foam fire fighting manufacturers, announced recently the purchase from Arnold, Hoffman & Company, Inc., Providence, R. I., of its goodwill, patents, formulae and trademark covering the wetting agent known throughout all industrial and forest fire fighting fields as "Drench."

Drench, which penetrates much deeper than water and one per cent of which doubles the effectiveness of ordinary water in extinguishing fires, will be immediately manufactured at National Foam System's principal plant at West Chester, Pa.

National Foam System, which specializes in form fire protection in the petroleum, chemical, marine, aviation and other industrial fields, adds Drench to its products greatly to increase the effectiveness of water, thereby reducing the required volume and more quickly extinguishing fires where water is scarce, or where the combustible is cotton, forests, or other material hard to estinguish with water.

Hahn Develops Novel Fire Fighting Unit

One of the questions uppermost in the minds of fire protection engineers is this: is the advance in the design and construction of fire control facilities keeping pace with, or ahead of, the rapid development in fire hazards and risks which are a part of accelerated living?

The war brought numerous hazards and fire control problems for the fire service, already run down at the heels as a result of the depression years' economies, and the heavy demands made upon it by the war. Those hazards have multiplied and become more intricate. On the other hand, the war, indirectly at least, gave impetus to improved fire extinguishing agents and the methods of applying them. Water-fog, fog-foam and more recently, wet water, have become reliable and valuable "ammunition" for fire fighters. Concurrently, the equipment necessary to effectively employ this "ammunition" has improved through the application of sounder, more scientific thinking by designers and builders of fire control equipment.

The latest weapon developed to arm the nation's fire fighting forces attests the efforts being exerted to further fortify the fire service against the inroads of today's and tomorrow's fires—both the "common garden variety"—and those peculiar to this chemical and 'atomic' age in which we live.

The new product is the creation of Hahn Motors Inc., Hamburg, Penn., D. Herbert Spangler, president. It is known as the "Spangler Dual" fire fighting unit, after the designer who, incidentally, with the Hahn company, is not unknown to the fire service.

The Hahn Company have produced fire apparatus for many years, and Mr. Spangler has been identified with the field for over forty years.

Long ago, Mr. Spangler was convinced that the measure of effective fire fighting was the ability to get sufficient water to the fire, and on the fire, in its critical stages (the "first three to five minutes" as fire fighters call it) to control and extinguish it.

The idea isn't new; many fire officers have advocated the principle, and many employ it today. The main problem, however, isn't the idea of thus getting to work on the fire, but of bringing sufficient water and power into play to accomplish the desired results. Although much effective work is done with booster tanks as small as 45 gallon capacity, using fog nozzles and wet water, many more fires could be extinguished were 150, 500, 1000 and even 1500 gallons of water immediately available.

In other words, Mr. Spangler, and others, who have given it thought, believe that, everything being equal, the number and amount of fires that can be extinguished with a piece of appara-

(*Continued on page* 748)

New Hahn Dual Fire Fighting Unit

Short Cuts and Gadgets

MORE ABOUT UTILITY STRAPS

A. B. Cone of Inyokern, Calif., describes his gadget as a "shoulder hose strap." Perhaps it has more uses than merely to facilitate handling of hose lines. We don't know—but some of our readers who like his idea may develop the thought.

There are many excellent "hose" straps, belts and holders in use in the fire service. Some, like the Rogers rope tool, have almost endless applications. One of the best we ever saw is that used by the San Francisco Fire Department. Too bad it isn't on the market. Possibly some companies are already using a strap similar to Brother Cone's. If so, write us and tell us about it.

According to Mr. Cone's specifications, the strap is made of parachute harness, including the loop, it measures 4 ft. in length by 2 in. in width. The shoulder loop, shown in the accompanying drawing is 2 ft., 2 in. in length; in other words, of the 4 ft. overall length, 2 ft., 2 in. constitute the loop.

To the end opposite the loop is securely fastened a strap hook (not a buckle) which can be used to fasten the strap around the hose, tree or ladder. According to Mr. Cone, in operation, the left arm is slipped through the shoulder loop and the hooked end fastened to the hose. In an emergency he says that it is only necessary to spin left, and the loop drops free.

* * *

IMPROVISED HOSE CLAMP

It is not unusual for a fire company to be caught without a hose clamp, while operating at a fire. This may be due to lack of such appliances, or having them on the wrong truck, or mislaying them (yes, that's happened, too).

When a line must be shut off, it is usually an emergency, and absence of hose clamp means the line either must be kinked, or some form of improvised shut-off used. Kinking a well charged line isn't always so easy when there's little slack or you're on a roof or there's a shortage of available personnel.

One of the interesting improvisations for a temporary clamp, handed us, is submitted by Roman M. Oman, of Milwaukee, Wis.

His rough sketch fairly well explains the idea, which is to utilize a short extension ladder, which usually can be located on at least one near-by piece of fire apparatus.

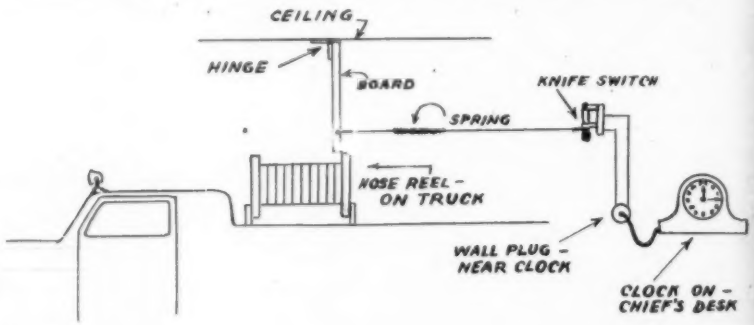
Thinking it over, we wonder how an ordinary step ladder would do—if at all? Guess we'll go out to the training ground and experiment! Who's going to submit the next idea for a make-shift clamp?

* * *

TO RECORD DISPATCH OF APPARATUS

This gadget isn't a "Rube Goldberg." It really works, according to contributor Chief E. R. Wiles of Kettleman City, Calif.

The big idea is to check the time on the fire truck when it rolls out of the station, and do it automatically.



This device consists of an ordinary clock located on the watch desk (or chief's desk); wires connecting it with a wall plug (near clock) and a knife switch; a wooden member hanging from its hinge downward from the ceiling and engaging the apparatus booster line reel. A spring-wire connects the knife switch so that when the truck pulls out, the vertical hinged member exerts pressure on the spring-wire, which in turn, actuates the knife switch, and stops the clock.

It looks simple and anyone ought to be able to install it.

Our thanks to Chief Wiles.

* * *

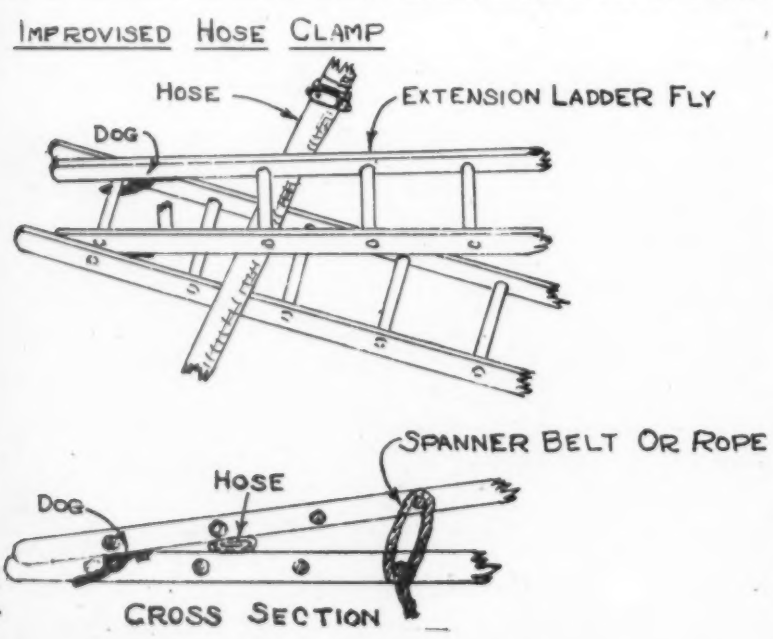
FUEL FOR THE TEST FIRES

One of the troublesome problems facing those fire companies that want to conduct real fire extinguishing tests is securing the fuel for the training fires.

That nationally known authority on fire control, A. C. Hutson, who, although he's retired from active connection with the National Board of Fire Underwriters, still manages to be on hand when anything special is going on, offered this suggestion following his observation of field trials of Westchester County's Firemen's Training Institute.

Said Mr. Hutson: "There's the answer to the hunt for fuel for demonstration and test fires"—pointing to the cribs of creosoted railroad ties on the field. "Every railroad has plenty of these old ties and usually burns them along the right-of-way; all you have to

(*Continued on page 747*)



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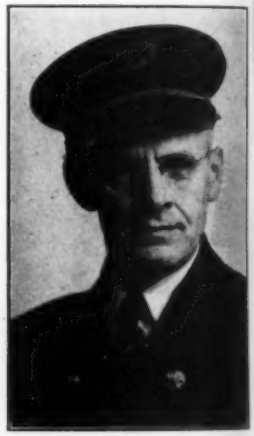

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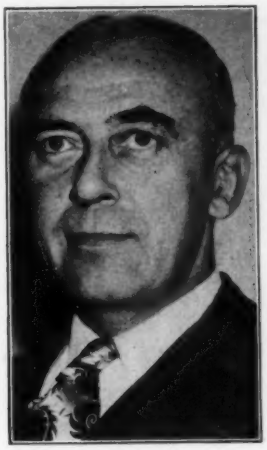

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Firemen Probe Source of Mysterious Petrol Fumes

New York City firemen conducted one of the most unusual and lengthy searches in the history of the fire department between July and October last, to locate the source of a mysterious seepage of gasoline in the cellars of four 75-year old tenements on West End Avenue, Manhattan. At the time of this writing, the origin of the seepage is still undetermined.

The first complaint was received by the department's Bureau of Combustibles late in July when the New York Central railroad notified the Bureau that vapor fumes were detected in the railroad's pump house at Sixtieth street off West End Avenue. The pump house diverts water puddles from the tracks to drains.

The initial investigation was begun by Fred H. Gavitt, a fireman detailed to the bureau; Captain David L. Harrick also was brought into the picture. Using instruments, Gavitt made tests of the neighborhood from Fifty-Seventh to Sixty-second streets between Tenth and Twelfth Avenues, where there is a heavy concentration of garages and filling stations that store gasoline in 550-gallon tanks.

Several leaks in the piping of the gasoline storage systems of the garages and stations were reported discovered. Some piping was estimated by Fireman Gavitt to have been defective for two to three years before the leaks were discovered during his tests.

Soon after test holes were dug, a fire was discovered in the cellar of No. 24 West End Avenue. Further tests revealed "an accumulation and pocket of gasoline" beneath the cellars of the houses at Nos. 20, 22, 24 and 26 West End Avenue.

Top officials of the fire department, including Commissioner Frank Quayle and Chief of Staff and Operations Frank Murphy, and the heads of other city agencies were called in. On August 14, several test holes were dug at low points in cellars of the four houses. On September 14 and 15 further tests were run which indicated "dangerous amount of gasoline seepage" in the cellars of the four old buildings, which contain sixty-four cold water flats.

Following this disclosure, forty-two families occupying the dwellings were ordered to evacuate their homes on the 14th. Meanwhile gas and electric services were turned off in the buildings, which also house small stores.

Special protective measures were taken by the fire department. No smoking was permitted within a barricaded safety area. Two charged lines, one leading to the front of the buildings and one to the rear, with firemen at the nozzles, were placed in position.

The Department of Welfare looked after the displaced tenants, some of whom were quartered in a school. All animals were checked out by the ASPCA and the members of the Bureau of Combustibles and others set to work to track down the seepage to its source.

Because of danger of possible explosion of the fumes, it was impossible to use motor-driven pumps to remove the spillage and seepage. The members of the department, however, devised and used for what is believed to be the first time, an oil separator and ejector to pump water and gasoline from the cellars of the four evacuated tenements. The newly developed apparatus, which is powered by water pressure, syphons the gas and water from the cellars. The liquid spills into a large drum and the gasoline rises to the top of the water, where it is separated from it, and removed.

Widow Collects for Fireman's Death

Mrs. Stephanie M. O'Malley, of Bridgeport, Conn., widow of the late Asst. Fire Chief William C. O'Malley, who met his death in a fire in that city, November 10, 1947, was paid $9,000 on September 24, in an out of court settlement of a $20,000 negligence action she brought in Superior Court, Bridgeport, against the Universal Sign Company and George Baum of Brideport, and Alfred Tearson, of Detroit, Mich., for the death of her husband.

Asst. Chief O'Malley was burned and injured fatally allegedly after he had been overcome by gas while fighting a blaze in the sign company's plant at 839 Railroad Avenue, Bridgeport. Mr. Baum and Mrs. Tearson are the owners of the property where the fire occurred.

It was contended in behalf of Mrs. O'Malley, administratrix of her husband's estate, that the sign company was negligent in using gas for the manufacture of neon signs in an unsafe manner.

Had the case been tried it is probable that the Connecticut Supreme Court would have been asked to decide for the first time the civil rights of firemen actively engaged in combatting fires.

The question would have been raised whether Chief O'Malley was on the premises as an invitee or patron for whose protection the defendants were bound to exercise reasonable care, or as a licensee on the property by tolerance. Five jurors had been selected before Judge Thomas J. Molloy in Superior Court when the settlement was announced.

TOM MAGNER.

Clock Rings Death Knell

On a lonely road, near Alturas, Cal., the charred body of George Berg, a machinist, was found in his burned motor car. Sheriff G. M. Johnson of Modoc County said an investigation verified that: Berg, alone on a hunting trip, stopped beside the road for the night. He put his bedding on the back seat and set his alarm clock for 6:00 A.M. He put a pistol beside him on his bed. At his head was a five-gallon auxiliary gasoline tank.

At 6:00 A.M. the alarm sounded. Berg jostled the pistol as he wakened. The pistol discharged, sending a bullet into the gas tank. The tank exploded and set Berg and the car on fire.

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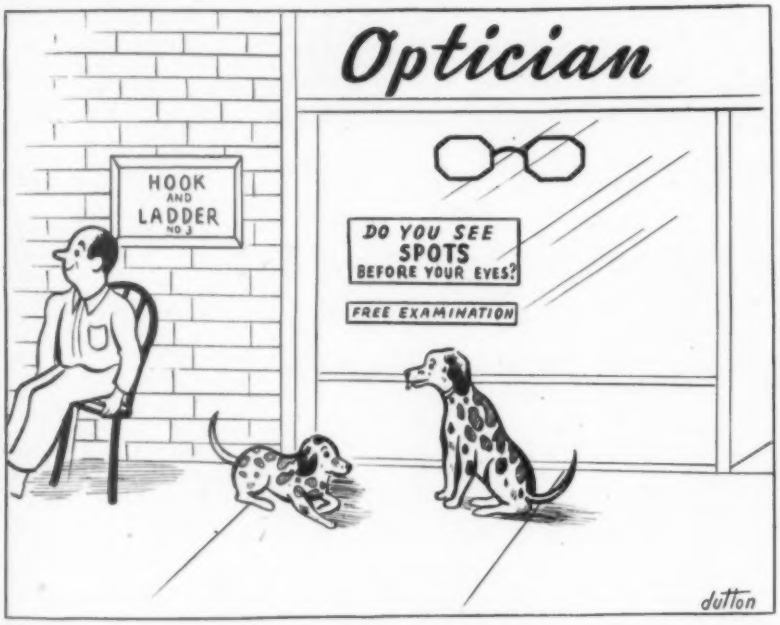
FALSE ALARMS



A Thorough Search

Lots of things had mysteriously disappeared from the fire station, so the Captain sent for the housewatch, who was a native of the Irish Free State.

Look here, he said, "If anything more goes, just stop the men as they are leaving at change of platoon, and search them."

About a week later the Captain happened to come down on the apparatus floor at platoon-changing time. There was the housewatch with all the men lined up.

"Take your coats off!" he ordered in an aggressive tone.

"What's disappeared, now?" whispered the Captain.

"A roof ladder," was the husky reply.

"I've just arrived at a certain place but I can't tell you where," the soldier wrote his folks at home. "However, I can tell you this much, I just shot a Polar Bear."

"I've been transferred from where I was when I last wrote you," he said in his second letter. "I still can't tell you where I am but I just danced with a Hula Girl."

"I still can't tell you where I am," said the third letter, "but I can tell you for sure . . . if I had danced with the Polar Bear and shot the Hula dancer I wouldn't be where I am."

A group of prohibitionists looking for evidence of the advantage of total abstinence were told of a man 90 years of age who had never touched a drop of liquor. They rushed to his home to get a statement. After hearing his story they propped him up in bed and guided his feeble hand so that he might sign on the dotted line. As this was being accomplished a violent disturbance was heard outside; scuffling feet, furniture falling and smashing dishes.

"Good heavens, what's that? gasped one of the group.

"Oh," whispered the old man as he sank exhaustedly into his pillows, "that's Pa. He's drunk again."

Impossible

A nurse told her father-in-law, who had a bad cold, to drink three pitchers of water a day and stay in bed.

When she saw him the next day he was much improved.

"Well, I see you followed my instructions," she said.

"Not entirely," he replied, "I drank the water okay, but I couldn't possibly stay in bed."

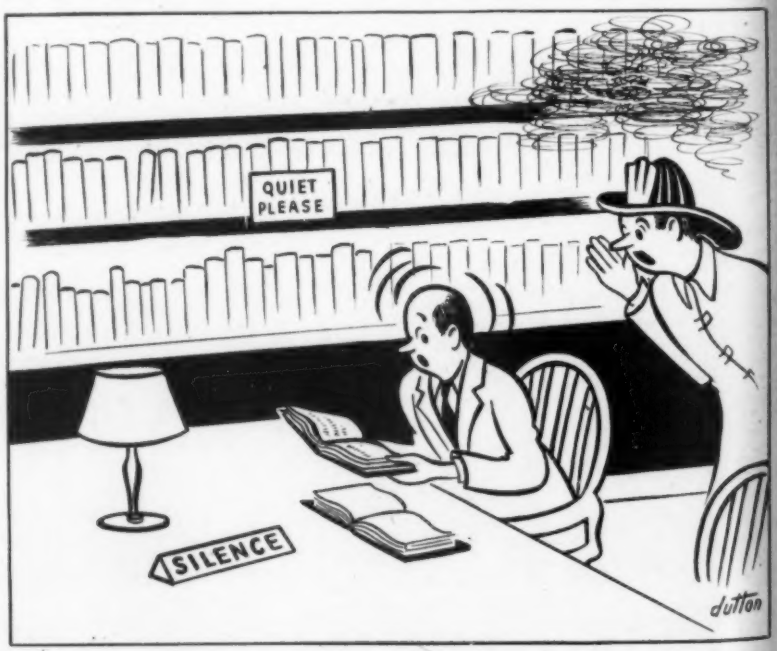
One night a tired medical man got his wife to answer the phone by the bed, say he was out, and give advice, which he whispered to her.

"Thank you very much, Mrs. Simpson," said the voice at the other end of the wire, "but I should like to ask you one thing. Is that gentleman who seems to be in bed with you fully qualified?"

The 3-year-old and his father were being pushed toward the rear of the rapidly-filling elevator. A kindly woman turned to the dad and said, "Aren't you afraid your little boy will be squashed?"

"Not a chance, lady," answered the father, "he bites!"

The late Senator Charles B. Farwell claimed this was the only perfect triple pun in the English language: A woman's three sons went to Texas to raise beef cattle, sheep and hogs. Stumped for a good name for their ranch, they wrote home to Mother for suggestions. Name it "Focus," she telegraphed. Puzzled, they wired for an explanation. The reply came immediately: "Focus—Where the Sun's Rays Meet."



"Psst!"

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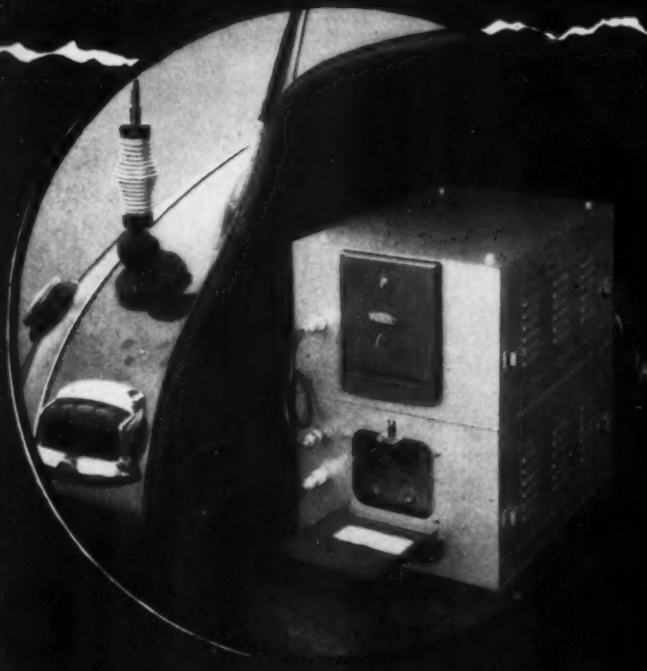

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SAFE ON ELECTRICAL FIRES—non-conductive.

FAN SHAPED NOZZLE — ejects flat stream; screens off flame from burning material; safeguards operator.

Only "ALL-OUT" gives *all out* protection. Demonstration anywhere, anytime. Write today for illustrated data.
Model A-16 illustrated, has 15 lb. capacity Model B-10 contains 10 lbs of dry chemical.

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Protects the operator as it kills the fire.

ALL-OUT MFG. CORP.
2 PARK AVENUE, NEW YORK 16, N. Y.

Atomic Bomb

(*Continued from page 678*)

would not have done any more damage to the buildings.

"Finally, the bomb caused in Japan, and can cause again, injury or death by direct compression. Doctors tell us it takes 250 pounds per square inch of pressure — remember, ordinary atmosphere is just under 15 — it takes 250 additional to kill a man by compressing his lungs or injuring some other internal organ, and a pressure of only 1 or 2 pounds per square inch will knock a building over, since the governing factor is force, or pressure times area, and in the case of a building, we have many, many square feet of areas; and if you have a building with few windows and doors, it is likely to accumulate enough force to knock it down, although the compression would not be sufficient to kill a person, unless he is burned, radiated, or has the building fall on him.

"Another interesting feature of the Japanese attack was the downward thrust which results from the high-altitude burst we mentioned. Many of the roofs were blown downward and some of the buildings right under the bottom were straightened out, straight down almost. That is a phenomenon we have never seen before with ordinary explosions and we wouldn't have it if we burst the bomb on the ground.

"The points about atomic explosions which will concern men who have to deal with fires, are these: First, you will have a tremendously large devastated area, larger than any you ever had to deal with before. That means it will be difficult to get your fire fighting apparatus around if there is any left to move around, and if there are any of you left to handle it.

"Someone suggested that perhaps if we are going to seriously build ourselves against future atomic attacks, we had better design fire fighting vehicles that can go over devastated areas before cleared lanes have been made.

"Next is your water supply, which may very well dwindle into nothing; some means must be employed to be sure that you will have water to use if you do get your equipment to the scene!

"The high air burst in Japan did not destroy the water mains under the ground because the pressure so many hundred feet from the center of the explosion was not great enough. However, every time a building with pipes falls down, you have hundreds of broken water connections, and your water dissipates very rapidly and your pressure goes down to almost nothing.

"Another problem which I believe is almost insolvable—and I don't think the fire departments can handle it—is how to get your equipment around safely through an area not only devastated, but covered with fission products or other radiating material.

"The problem of the fire fighting man would then be how to protect himself from these radiations, or how to pick his way through the dangerous areas. Now, that is something which I believe our civic organizations in all our large cities are going to have to face very soon. They must have the instruments which are commonly known by the name of Geiger counters, so they can measure radioactivity, so they can map out safe lines through which people can evacuate themselves and through which you may pass if you have to fight the fires.

"Just to emphasize what your problem will be—the problem of all of us if we do have atomic bombs burst over our city—I would like to quote from the British report, which is highly recommended by all who know about it, when they made their own investigation of Hiroshima and Nagasaki. They translated it in terms of their own City of London, which is interesting, because our cities resemble London more than they do the Japanese. They said, 'If a bomb burst over London, it would have caused complete collapse of all buildings up to 3,000 feet from the center of the explosion; it would have badly damaged everything up to a mile away from it. It would have caused a need for extensive repair to all dwellings up to one and one-half miles; it would have necessitated first aid repairs out to two or two and one-half miles. The net result is that 30,000 homes would have been wrecked, 35,000 would have been badly damaged, and 50,000 to 100,000 would have been seriously damaged.' Thus, they estimate 400,000 people would have been rendered homeless by one airburst atomic bomb. Fortunately, or unfortunately, not all 400,000 would have to seek other homes, because 50,000 would be dead or die within eight weeks."

Rochester Hotel Fire

(*Continued from page 680*)

most part were removed to the roof; those below were removed by the elevators, and down the "fireproof" stairwells. Many guests remained in their rooms on the advice of telephone operators. At no time, it is said, was there any panic or disorder.

Cause of the fire is attributed to an unnoticed lighted cigarette dumped into a wastebasket in the broom closet by a chambermaid shortly before the fire was discovered. The first alarm was telephoned to the hotel desk by an unidentified guest; the clerk on duty at once notified the Fire Bureau, which also received two box alarms from the vicinity at about the same time.

Firemen of the 3rd Battalion under command of Battalion Chief Michael O'Beirne with six pieces of apparatus and the Protectives dragged their hose lines up aerial ladders and interior stairways to the fifth and sixth floors. Meanwhile members of the hotel's staff are said to have attempted to operate house lines between the fifth and sixth floors.

The fire was under control in twenty-five minutes, but firemen remained at the scene until nearly 7:30 P.M. overhauling and ridding the structure of smoke and water, which caused considerable damage to the upper stories. In addition to Fire Chief Slattery, Deputy Chief James G. Murray directed operations.

Chief Slattery suffered from smoke poisoning but remained at the scene as did other injured Firemen: Herbert Bentley of Engine 14 and John Herman of Engine 17, who suffered a fractured finger. Shortly after 9:00 P.M., following the fire, Chief Slattery was removed from his home to St. Mary's Hospital where he underwent emergency treatment and was admitted to the hospital. His condition was listed as "fairly good."

It is reported that the instructions given hotel guests by the hotel tele-

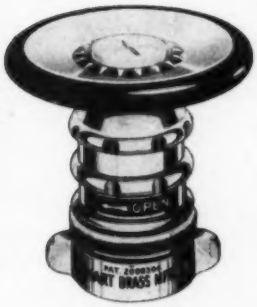

Plate 200

ELKHART Standard Mystery Nozzle

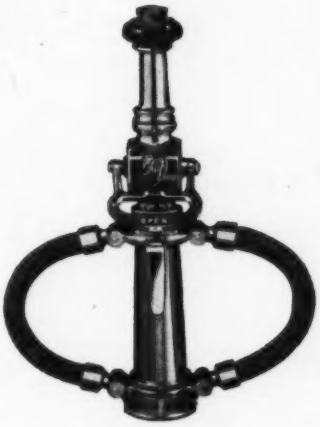

Plate R-279

ELKHART Chief Shut-off Nozzle

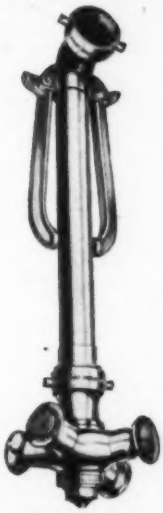

Plate R-200

ELKHART Mystery Cellar Nozzle

Plate R-329

ELKHART Rocker Lug Type Coupling

THE BIG "E" . . . . . for EFFORT. EFFORT that has made the Name ELKHART a stand-out in fire-fighting equipment since 1902.

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BRASS MANUFACTURING CO.

ELKHART . . . . . INDIANA

In the never-ending fight against fire, the members of the I.A.F.C. are constantly striving to develop more advanced tactics, more effective strategy in conquering man's age-old enemy. They can point to an impressive record of success.

Many of the fire prevention and fire protection techniques in use today stem from investigations and research conducted by the I.A.F.C. in the last 75 years. Many of the weapons of modern firemen are the result of close working cooperation between I.A.F.C. officials and the engineers of fire-equipment and manufacturers. That's a teamwork that has accelerated fire-fighting progress.

We of Eureka Fire Hose congratulate the members of the I.A.F.C. on their Diamond Jubilee, and express the hearty wish that they may continue to be a valuable aid and inspiration to the fire-fighting profession.

EUREKA

"For greater protection to life and property"

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phone operators to "stay in their room and keep the door shut" helped to reduce the number of casualties and retard the spread of the fire.

Second Serious Rochester Fire Two Days Later

Members of the Rochester Fire Department had hardly gotten over Thursday's Cadillac Hotel fire when on Sunday they were called upon to control an even more threatening blaze, from the property viewpoint, in the Prens Carting & Storage Company four-story sales warehouse at 434 State street, in the lower downtown area.

This fire, of unknown origin, apparently started on the rear of the fourth floor which was filled with closely packed furniture, and spread downward to the third floor and upwards to the blind attic before it was checked by eleven fire companies under command of Fire Chief John A. Slattery, who only the day before had been released from the hospital. Assisting him was Deputy Chief Walter Adams. Battalion Chief Raymond Schleyer commanded the initial assignment of six companies responding on the first alarm, which was received at 5:29 P.M. Sizing up the seriousness of the blaze, Chief Schleyer ordered a "three two" which brought five additional companies and Chiefs Slattery and Adams.

The fire's origin was investigated by Chiefs Slattery and Murray and Lieutenant John Hurley and Detective Thomas Van Auker of the Arson Squad. The latter reported that a number of rubbish fires of suspicious origin had started around the building during recent years. No watchman is employed on the premises which were said to have been vacated since the day before. The loss was reported at upward of $40,000.

Scientists Learn New Facts About Lightning

Dr. E. L. Harder, Westinghouse Electric Corporation lightning authority, has disclosed that company scientists are now making "carbon copies" of mighty lightning bolts in a quest to improve man's defenses against one of nature's most destructive forces.

By reproducing in the laboratory natural strokes "trapped" at outdoor experiment stations, the scientists are building up a complete lightning library for research use.

The most powerful lightning stroke ever recorded by Westinghouse engineers occurred during the summer of 1947. The bolt was estimated at 345,000 amperes—equal to the current flowing into 300,000 homes—and was so powerful that it damaged part of the equipment set up to trap it. Since that time new and improved equipment has been installed at the Westinghouse experimental station atop the University of Pittsburgh's 535-foot Cathedral of Learning.

Dr. Harder has disclosed that lightning research has turned up many unusual facts. For example, both "hot" and "cold" lightning have been discovered. The "cold" variety shatters trees and makes a loud report; "hot" lightning starts fires but makes little noise. Dr. Harder also stated that some lightning strikes from the ground upward instead of coming down from the sky as is usually imagined.

BOYER FIRE APPARATUS
Dependable for over 70 Years

BOYER-HALE 500 G.P.M. three-stage high and low pressure combination pumper with 400-gallon booster tank, mounted on Chevrolet chassis, used at Zilwaukie, Mich.

Boyer fire apparatus is virtually custom built. Boyer's standard specifications and features meet all basic fire department requirements. However, it is customary to provide additional special equipment which may be specified by the purchaser. This extra equipment or fire fighting facilities includes such items as compartments, reels, extra ladders, booster tank fillers, etc.

This flexibility of specifications is further augmented by HALE pumps of various sizes and stages. Newest and most revolutionary is the HALE model HPZL high and low pressure three-stage pump embodying a two-stage 500 G.P.M. 120-pound pressure and a high pressure fog — 30 to 120 G.P.M. at 500 to 800 pounds pressure — a three-stage integral pump. This combination lacks nothing.

All equipment mounted on the chassis of your choice.

BOYER builds straight ladder trucks, pumpers, and quads — up to 1250 G.P.M. All are HALE units — nationally known and fully approved by the National Board of Fire Underwriters. Body work and detail brilliantly executed. A product of distinct merit.

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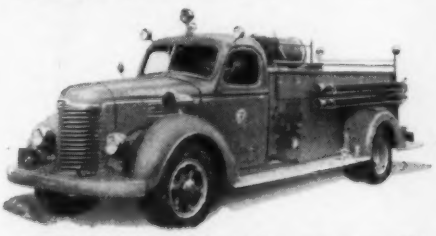
BOYER-HALE 500 G.P.M. two-stage pumper with 500-gallon booster tank, mounted on Ford model F-5 equipped with Marmon-Harrington Four Wheel Drive Conversion. In service at Hickory Township, Lawrence County, Pa.

BOYER-HALE 500 G.P.M. two-stage pumper with 500-gallon booster tank mounted on a WB20 White chassis — an installation at Hummels Wharf, Pa.



BOYER-HALE 500 G.P.M. two-stage pumper with 300-gallon rear fill booster tank mounted on K-6 International, in Lombard, Ill.

National Sales Office: **LOMBARD, ILL.**

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ALL PARTS HIGH LUSTRE, CHROME FINISH—EQUIPPED WITH PROTECTIVE LENS GUARD AND ALL-LEATHER CARRYING STRAP

FEATURES

- Less expensive operation than dry cells.
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- Positive "Non-spill" construction.
- Light can be focused and directed as desired.
- Weighs only 95 ozs. complete.
- Simple to charge and water. No need to take lamp apart.
- Price and operating cost make Wheat adaptable to any budget.

2,500 FOOT BEAM
25,000 CANDLE POWER
1,000 HOURS OPERATION

KOEHLER MFG. CO.
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The WATCH DESK

Overhauling the firemanic news of the day

by ROI B. WOOLLEY

The Ubiquitous Volunteer!

Harry Brainard, dairy farmer on the Chapman Beach Road, Westbrook, Conn., had more farm hands on April 23 then he ever had before, and probably more than he'll ever have again—some 60 members of the Westbrook and Old Saybrook Fire Departments. They came to extinguish a fire in Brainard's cellar, and stayed to help with the milking and to feed his 18 cows in the barn nearby.

After aiding Westbrook firemen in dousing the fire, caused by a hot water oil heater, the Old Saybrook volunteers left and returned again with a portable lighting plant to perform their duties as milkmaids, while other firemen finished the job on some coke still smoldering in the cellar.

They started milking by hand but soon got the electric milking apparatus in operation with the aid of a portable generator. The fire had cut the supply of electricity from the farm.

The flames were confined to the cellar. Fire Chief Albert Palm directed the work of the Westbrook firemen, with James Dibble in command of the Old Saybrook Department. (Tom Magner.)

* * *

Page Rube Goldberg 'n' Ripley

It may sound a little on the Rube Goldberg and Ripley side, but here's what firemen at Bridgeport, Conn., found, one day when called to a still alarm to 153 Charles street:

A box of cookies on a shelf above the kitchen sink had toppled down on the handle of a water faucet, turning on the water. The cookies from the box plugged the drain. The sink overflowed, causing a short circuit when the water seeped through the flooring onto electric wiring. Somebody spotted the trouble and called the Brothers—and that was that! (Thanks Tom Magner.)

* * *

There Ain't No Justice!

John Mackey, St. Louis fire-extinguisher salesman, was passing a filling station in Pana, Ill., operated by Tony Reiss, when an automobile driven by Charles Schmitz, of Oconee, skidded on the ice and struck a gas pump. The pump overturned and burst into flames.

Mr. Mackey leaped from his automobile with a sample fire extinguisher (deponent sayeth not what make and put out the blaze before the Pana Fire Department arrived. But when he attempted to sell an extinguisher to Mr. Reiss, the station operator declined. "The fire's out now," he said. "Wouldn't happen again in years." (Thanks William Schwartz.)

* * *

Little Drops o' Water

Down in Atlanta they're still taking about a misdirected drink of water that brought out a full alarm assignment in the downtown area one Thursday night and threw almost everyone at mammoth Grady hospital into a dither. Grady hospital, it may be remembered, played a stellar role in the tragic Winecoff Hotel fire!

What happened was this: an ambulance driver, bending over a drinking fountain, got the water in his eyes instead of his mouth; he grabbed for a towel, but instead, pulled a fire alarm box chain, bringing wholesale response of the Brothers.

After suitable explanations, the hospital patients went back to sleep, the firemen returned to their quarters, and the hospital staff picked up where it left off. (Thanks Earle Robinson.)

* * *

Cat Clings to Last of Its Nine Lives

When a roaring fire destroyed most of Heard's, Ltd., confectionery factory in Parnell, New Zealand, earlier this year, with loss of $450,000, publicity was about equally divided between the Parnell Fire Brigade "which made a remarkable save" and Jock, a tough old Tomcat, who clung tenaciously to at least a couple of his nine lives while trapped in the blazing structure all through the fire.

At the conclusion of the blaze, which was fought by eight fire engines, an 87 ft. mobile extension ladder and other equipment, most of the large factory was in ruins. And—in the ruins Jock, badly singed, his eyes and nose about out of business, and paralyzed in both fore legs, when members of the Brigade got to him. His remaining few lives were trembling in the balance as he was handed over to the S.P.C.A. There he was treated by Dr. W. G. Fischel, vet', who said that Jock's toughness had carried him through an experience which might well have killed an animal with less resistance.

A bit of catnip to "Jock." (O. Humphries, Fire Station, Hamilton, N. Z.)

* * *

Hot Off the Tape

C. A. Barnet, of Hopkinsville, Kentuck, proprietor of a liquor store, "banked" $32,000 to $34,000 in currency in the glove compartment of his automobile. But he didn't bank on fire! His car—and his cache—burned of a night, while parked near his home—he was told to send the charred currency to the U. S. Treasury and make application for redemption. . . . In Moline, Ill., soaring meat costs proved only a "false alarm" to the crew at Station 4. The foresighted braves were ready for the emergency. They bought 75 young ducks at 33 cents a head, and fed'em generously. Last month the birds were ready for the "forcible entry tools!" . . . In St. Regis Falls, N. Y., the vamps were summoned by automobile horns and church bells when a theatre fire disrupted telephone service and put the village fire alarm system out of order. . . . Frederick Hasher, 45, former chief of the Pitman fire patrol Pitman, N. J., died Aug. 12 last in a Woodbury, N. J., hospital of burns suffered the day before when a can of cleaning fluid he was using exploded. . . . An operator in the Troy Fire Department's signal station, was arrested in August and accused of turning in false fire alarms after going off duty. The arrest followed a series of eight morning false alarms from two boxes in a residential area. . . . Members of the Rockland, Me.

HAVE *You* TRIED "WETTER WATER"?

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Prove to yourself that "Unox" Penetrant changes water into an aggressive, multi-purpose, fire-extinguishing agent. Try *this* "Wetter Water" on materials you can't wet now with plain water.

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Because it penetrates, there's little run-off . . . in most cases, no water damage.

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FIRE CHIEFS . . .
to improve fire-fighting efficiency of your equipment
to cut your town's fire losses
to save your men punishment
You need "UNOX" Fire-Fighting Penetrant

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Fire Department returned from fighting a woods fire on Islesboro, Me., the night of August 29th and reported about the only property damaged caused by the flames was to the Islesboro fire truck. They said the apparatus was driven close to the fire area and when a juniper bush by the side of the road took fire the apparatus was damaged. . . . In Ithaca, N. Y., lightning went haywire when it struck two persons, an ambulance dispatched to bring them to a hospital; knocked down 22 trees and started three fires, all on the night of August 28 last. The ambulance on its mercy errand had its door burned and windows smashed by the bolt. . . . In Bellport, L. I., Federal Judge Mortimer W. Byers of the Eastern District of New York received a suspended sentence Sept. 3rd on charge of unlawful parking. He left his car too near a hydrant. . . . Twelve persons, including two children, were critically burned Aug. 28 last, when a gasoline tank exploded and set fire to a 34-foot cabin cruiser at the Wessagusset Yacht Club, at North Weymouth, Mass. . . . A 14-year old farm girl, Annie Ree Huff, hacked open the door of an overturned school bus Aug. 30th and freed fifty imprisoned occupants, eleven of whom were injured. The bus overturned in an accident with an auto. The girl heard the screams, seized an axe and chopped open the door. Fortunately there was no fire. Orchids to Annie Huff! . . . In White Plains, N. Y., Mrs. F. R. Wolff of 7 Seymour Place had never chased a fire truck in her life, but Sept. 1, when a ladder truck sirened past her as she drove along Mamaroneck Ave., she decided to break precedent. She wound up at her own home. Fire started by sparks from a rubbish blaze burned off the shingle roof of her garage. . . . Police and fire officials of Lynn, Mass., were ready to campaign in August against cigarette-sniping birds, after it was agreed that a fire and a resultant traffic jam at Lynn Beach resulted when a bird brought a lighted cigarette to its nest under the eaves of a Washington street dwelling. Firemen quickly snuffed blaze but police had over an hour to clear up the traffic tangle. . . . Warwick Wood, volunteer fireman of Mechanicville, N. Y., put the bite on the city by asking $75 to replace false teeth he says he broke when he jumped from a moving fire truck. City attorney Ryan pondered the case. Local law provides compensation for "personal injuries" suffered by firemen in line of duty, but it was kinda hard to define Wood's case. The Old Timer is inclined to say that the victim could be wrong on two counts—(1) goin' to a fire with his false choppers in his mouth and (2) jumpin' off a moving piece of apparatus. 'Course the Old Timer wasn't there! . . . In St. Louis, Mo., Eugene Donahue, 64, bogged down in a mass of tar at a city dump, in August, and seven pieces of emergency apparatus were rushed to save him. Three firemen with aid of a ladder and at sacrifice to most of Donahue's clothes pulled him out. . . . Three boys, seven to nine years old in Elko, Nev., were injured when a dynamite cap, which they thought was a firecracker, exploded. . . . Two more small boys were injured seriously in Keyport, N. J., when what police described as a shell exploded, while they were playing with it on the sidewalk. Keyport police arranged for a high-speed ambulance run of ten miles through all towns to the Hazard Hospital, Long Branch. . . . Use of Toledo Ohio, 21 fire stations as selective service registration points was offered to Lucas County draft Boards. . . . The automatic siren at a grain elevator near State Center, Ia., went off and brought firemen on the jump during Iowa's 100-degree heat, but the Brothers couldn't find any fire. Seems the sun had touched off the alarm.

* * *

Coals to Newcastle?

Fire came right to the members of Ladder 1, 72 Jackson street, Paterson, N. J., last September 1. Four members of that unit smelled smoke in their second-floor dormitory at 5:40 A.M., and investigation disclosed that their ladder truck on the ground floor was on fire.

Unable to extinguish the blaze with the first-aid chemical extinguisher equipment on the truck, an alarm was tapped in to which Engine Companies 1, 4 and 9 responded.

Fire Chief James Troy, who said the fire was caused by a short circuit in the truck's motor, reported that the damage consisted mainly of burned wires and scorched paint. The only other "casualties" according to the chief, were a fireman's rubber coat, boots and helmet, which happened to be lying on the battery box of the truck."

(Thanks to numerous contribs who sent in this item.)

For Department "Heads" Only

(THIS IS FOR CHIEFS)

On the occasion of the annual convention of The International Association of Fire Chiefs, may we add our greetings to those you may already have received?

And while you're all together, here are collective congratulations . . . and our best wishes for success for you all during the next year.

To the many of you who have come to rely on accessories by Buckeye, we hereby state our intention to continue providing the finest fire department equipment it is possible to make.

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Nation's Volunteer Firemen Honored by Postage Stamp

Dover, Delaware, was the scene of impressive ceremonies held in connection with the first day's sale of the United States postage stamp issued by the nation commemorating three hundred years of "courageous, unselfish service and devotion to duty by our nation's volunteer firemen."

The stamp, which is the first ever issued by the Government honoring the

fire service, went on sale October 4, 1948, at the Post Office in that city as part of a two-day celebration participated in by the volunteer firemen of the area, and notable visitors.

The opening ceremony took place in front of the postoffice with Dr. H. V. Holloway, former state superintendent of public instruction, as master of ceremonies. Patriotic music was furnished by the Smyrna, Del., Volunteer Firemen's Band. The invocation was delivered by the Rev. O. A. Bartley, president of Wesley Junior College, with members of the American Legion and Veterans of Foreign Wars participating in the presentation of the colors.

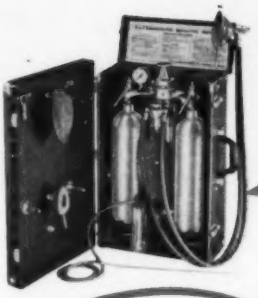
Following the singing of the national anthem by Mrs. E. Stuart Outten, J. O. Willis, mayor of Dover, welcomed the visitors and introduced the distinguished guests. He was followed by Delaware's Governor Walter W. Bacon, who eulogized the volunteers.

The first sale of the new, colorful commemorative stamp was conducted by the Postmaster General's office after which the person through whose efforts the stamp was realized, Congressman J. Caleb Boggs, told the story of how it came about. Congressman Boggs, who introduced the bill authorizing the adhesive, has had more than a passing attachment for volunteer firemen ever since they saved his home from destruction by fire.

Other speakers who joined in praising the nation's volunteer firemen were T. Alfred Fleming, National Board of Fire Underwriters; E. N. Dougherty, president, Delaware State Volunteer Firemen's Association, and Ned H. Dearborn, president, National Safety Council.

A parade of state volunteer fire companies was held on Sunday, the 3rd, with Dover's vamps serving as hosts to the many visitors. At the conclusion of this event, Robbins Hose Company No. 1 of Dover marked the occasion by laying of the cornerstone for the addition to its apparatus room which is to house two new pumpers.

The new stamp, of which 50 million were printed, is of 3c denomination, red in color, and depicts Peter Stuyvesant, "organizer of the first volunteer firemen in America," flanked on one side by an old-style 'gooseneck' tub "enjine" of 300 years ago, and on the other by a modern streamlined pumper.



this E & J Resuscitator

Brought this Praise

Letter Lauds Dept's Aid to Rev. Peck

Firemen Praised by Church

A letter of appreciation for the services of the Monroe City Fire Department has been sent to Chief Russell Emerson by the Council of Administration of the First Evangelical United Brethren Church for services performed during the serious illness of the Rev. W. P. Peck, pastor. The Rev. Mr. Peck is now recuperating at his home.

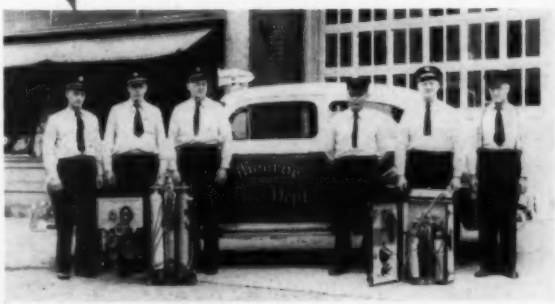
The pastor underwent an operation at Monroe Hospital last Dec. 15 during which his respiratory system collapsed. A call was sent to the Fire Department at 11:19 a. m., according to department records, and Lt. Glen Holmes and Fireman Robert Yensch responded. They worked with resuscitator and inhalator alternately for five hours and 26 minutes before the danger was over and an oxygen tent could be put to use.

The letter, signed by Herbert C. Sells, vice chairman of the Council, and by Stanley M. Rees, secretary, reads, in part, as follows:

"We wish to express our appreciation and thanks to the Monroe City Fire Department for the fine job two of our city firemen performed in using the resuscitator during the serious illness a short time ago of our pastor, Rev. W. P. Peck, at the Monroe Hospital, and special thanks to the two firemen for standing by till the danger was over and the oxygen tent was put to use.

"We feel in making this statement it is in acknowledgement of service to those who serve us, 'the public,' so willingly in times of need, and too often we take these services for granted, ready to criticize and condemn when things go wrong, but forget the common courtesy of 'Thank you' when all is well."

to this Department



You can offer this same praise-worthy service to your community by having an E & J resuscitator at your command for emergency calls. See for yourself how this machine breathes automatically for asphyxia victims. Write for a demonstration today—there is no obligation. If funds are low, your E & J representative has a plan to raise the money for you.

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The ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

WHAT CONTROLS FOR USE OF PAINTERS' TORCHES?

THE discussion in this Round Table is a continuation of that which appeared in the September issue on controlling the use of gasoline blow torches for removing paint.

The generous response from our readers made it necessary to carry the discussion over to this issue.

Readers are invited to send in their comments on this subject or on next month's subject which is described in a box on a subsequent page. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

Discussion of the Topic

Arthur G. Johl, First Assistant Chief Engineer, Milwaukee, Wis.: I submit the following relative to blow torch fires in Milwaukee:

Year	Total Fires	Blow Torches	Losses	Percentage of Total Fires	Percentage of Total Losses
1941	2,859	18	$1,641	.0063	.0031
1942	2,751	19	1,030	.0069	.0019
1943	3,407	12	3,234	.0035	.0035
1944	2,857	8	1,445	.0028	.0016
1945	3,285	4	1,256	.0012	.0009
1946	3,709	15	1,283	.004	.0006
1947	3,509	12	2,829	.0034	.0021
1948 (6 mos.)	1,558	4	....	.0025	.....

From the foregoing figures, it can be seen that the problem of using gasoline blow torches for removing paint, has not been too great in our community. However, it would seem that some regulation for their control should be established.

I believe some form of control by municipalities should be established, because each instance of the use of a blow torch creates a property and life hazard.

The best method of control, would be to eliminate the use of such open flame torches, and insist on removal of paint through the use of non-flammable paint removers. Non-flammable paint remover is available and its use would provide greater fire safety.

Out-of-town painters would be subject to local regulations in the same manner as now governs builders, electricians, etc., as well as civilian visitors in their general conduct.

George E. McGaw, Chief, Fall River, Mass.: I believe that the fire loss from the use of blow torches for the purpose of burning off paint does warrant some control over this practice.

I believe that no painter should be allowed to use a blow torch for the purpose of burning off paint without first obtaining a permit from the local fire department for this purpose and that such permit should not be issued until the building where the burning is to be done has first been inspected and approved by a fire department inspector. It is also my opinion that any painter using a blow torch for paint removal should have some form of extinguisher for each blow torch being used on a job.

I would make the same rules for out-of-town painters.

F. C. Vernotzy, Chief, Akron, Ohio: I do believe that the removal of paint by the use of gasoline torches, by painters, should be controlled by the various municipalities.

I would suggest a city ordinance that would require a permit for such work. (If the fire department were the issuing agent, you could rest assured that very few, if any, would be issued).) Why give a man permission to burn his house, or the house of another, down.

Out-of-town painters have caused us no trouble in this area to date. The local painters union seems to have this situation well in hand.

During the war years a great deal of inferior paint was applied to a great many buildings in this area. The results are just now showing and a great amount of torch work is being done in Akron. We have been very lucky so far. Maybe the fact that

HERE IS THE TOPIC

1. **Do you believe that fire damage, resulting from painters using gasoline torches for paint removal, warrants some form of control by municipalities?**
2. **If so, what method of control would you suggest?**
3. **How would you control painters from out of town who do not do business regularly in your community?**

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2½" Female to Pair 1½" Males. Quick-Acting, Quarter Turn Valves. IPT or NST.

@ $9.00 SPECIFY THREAD

ASBESTOS FIRE SUITS — Complete Coverage. Safety Crash Helmet. Pyrex Window. @ $8.50

FOAM NOZZLE — With Pick-Up Tube. Connects to Hose. Pulls Foam into Stream. 1½" Brass. @ $11.50

FOAM NOZZLE SPECIFY 1½" THREAD

FOAM LIQUID—5 Gal. Cans @ $5.00

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BRASS SHUT-OFF WITH PLAYPIPE

Ball Type Shut-Off with Tip. Playpipe Has Flat Leather, Swing Handles and Ladder Hook.

@ $19.50 FOR 2½" NST HOSE

OXYGEN BREATHING UNITS

Self-Generating Chemical Units. Set Has 7 New Canisters, Each Good for 1 Hour, Tools and Instruction Book.

Complete Set @ $31.50

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1½"	UNLINED LINEN	50' Lengths with Brass IPT Couplings — ULI. NST or Other Couplings, Applied @ $2.00 Extra.	@ $10.00
2½"	UNLINED LINEN	50' Lengths with Brass NST Couplings—ULI. Unused, Clean and Perfect.	@ $15.00
1½"	SINGLE JACKET	50' Lengths with NST Couplings. Unused, Clean and Perfect.	@ $12.50
1½"	DOUBLE JACKET	50' Lengths with Any Brass Couplings Desired. Unused, Clean and Perfect.	@ $18.50
2½"	SINGLE JACKET	50' Lengths with NST Couplings. Unused, Clean and Perfect.	@ $25.00
1½"	RUBBER NEOPRENE	25' Lengths with Brass IPT Couplings. Heavy Wall Construction.	@ $12.50

RUBBER SUCTION HOSE

2"	HARD SUCTION	10' Lengths with Brass IPT Couplings. Heavy, Wire Reinforced.	@ $8.50
2½"	HARD SUCTION	25' Lengths with Brass NST Couplings. Heavy, Wire Reinforced.	@ $19.50
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Above 2½" HOSE with Brass NST or IPT CPLGS. @ $13.50

4"	HARD SUCTION	10' Lengths with Iron IPT Nipples. Neoprene Wire Reinforced.	@ $16.00
4"	HARD SUCTION	25' Lengths with Various Connections. Neoprene Wire Reinforced.	@ $29.50

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$13.50 Complete Set

Nozzles Alone @ $11.00 **Available with 10' Applicator @ $14.50**

Also 2½" NST Fog Nozzles, Brass, with 12' Applicator Set @ $19.50

HOSE CARTS

Heavy All Metal Construction. Wheel Height—48". Width—54". 500'—2½" S.J. Hose Capacity. Has Tool Box, Fire Axe and Rope. Complete in 400 lbs. Case @ $39.50

300 Ft. Capacity Cart @ $21.50

Many Other Items at a Small Fraction of List—Write for Circulars

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we instruct our inspectors to be on the lookout for these jobs has helped. We have adopted the policy of warning all painters doing this burning and are recommending that they use one of the commercial paint removers on the market today.

Frank S. Sandeman, Chief, Long Beach, Cal.: I believe that the fire damage resulting from painters using gasoline torches for paint removal, warrants some form of control by municipalities.

I would be in favor of an ordinance similar to the one quoted in NBFU Bulletin No. 269 with the following addition:

"Any person..... In all cases the person doing the burning shall remain on the premises one hour after the torch or flame-producing device has been used." Added: ". . . and periodic inspections shall be made inside and outside of the building during said one hour period."

A license is required for anyone doing business in this city.

In most cases where the flame burning device is used for the removal of paint, it is usually done on older type buildings where siding or boarding has had many layers of paint, consequently, the blow torch method is employed because of the speed and ease in which the job is done. However, many of the older ordinances did not require the use of fire blocking between studding. This invariably allows a more concentrated accumulation of dust, cobwebs, frayed tar paper, etc. than would ordinarily gather if fire blocking were used. This accumulation would become ignited from the flare of the blow torch entering through cracks, warped siding, etc. and will very often burn for some time unnoticed. It stands to reason that the utmost in precautions must be taken to prevent hidden fires from starting in these spaces.

Much water damage can also result from the unintelligent use of garden hose streams by inexperienced persons in combatting a fire inside the walls of a building and very often an alarm of fire is delayed owing to unwillingness to transmit same on account of carelessness and lack of taking the proper precautions.

Charles L. Slade, Chief, Des Moines, Iowa: Our records do not show enough fires caused by paint burning to, in my opinion, warrant legislation to prohibit or regulate. It would be just another permit to issue and more policing to be done and with our limited personnel in the bureau we have our hands full enforcing the present permits.

Patrick J. Keelan, Chief, Elizabeth, N. J.: The Fire Department should have control under City Ordinance or by the Fire Prevention Code .

Painters should be required to apply to Fire Headquarters for permission to use gasoline torches for paint removal or any other purpose.

A fee should be charged and some responsibility placed on the contractor.

All of the foregoing suggestions should also apply to users of welding acetylene cutting torches.

I have found that outside dealers make themselves acquainted with our regulations before doing any work and as a result we have very little evasion of these regulations by outside dealers.

Edward Novak, Chief, St. Paul, Minn.: It is my opinion based on the records of this office that the number of fires and damage resulting from them due to painters' torches are so few, averaging less than three a year in this city for the past eight years, that it does not warrant the expense and effort of trying to put this activity under control.

It is my belief that it would be necessary to place the contractor under city license and then require him to secure a permit for every job where this method of paint removal is used so that the Fire Department would have an opportunity to check his equipment and the qualifications of his workmen, and also demand that some portable fire equipment be kept convenient.

I think the licensing method would control the outside painters.

William J. Connelly, Chief, Syracuse, N. Y.: From my experience in fighting fires over a period of more than 30 years, I believe that it is high time that some form of control should be instituted by cities and smaller communities over the use of gasoline and kindred blow torches by painters.

We have run into several rather serious fires which were caused by this kind of torch in recent years, and

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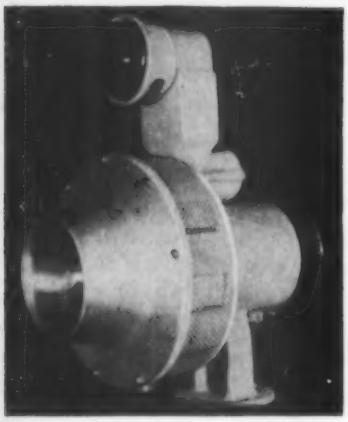

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The first switch contact of 3 to 4 seconds brings siren to peak high tone and then rolls for 5½ minutes or about twice as long as the average present day long roll siren. After being broken in, it may roll as long as 7 minutes. After the first contact, subsequent contacts of about ½ second, provide a totally new signal performance and the lowest minimum drain on the battery. There is nothing comparable with its performance. Built for the hardest type of service.

The illustration above shows the only sensible red light siren combination ever built. Why? The answer is, a siren is a noise pump and the suction or air inlet is in front of siren. Any obstruction placed there, curtails and reduces the efficiency of the siren. The discharge comes out through the port openings around the stator or shell of the siren. Nearly all pumps have either a larger suction or the same size as the discharge. Accordingly, any obstruction at the suction will starve the pump. All Fire Chiefs know this argument is true and it is easily proven. Start your open front siren and hold a piece of cloth material in front and the siren will instantly draw it inside.

WRITE FOR CIRCULAR DESCRIBING

SINCE 1920 PERFECT NOISE PUMPS SINCE 1920

J. N. HEDBERG

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have frequently discussed the possible adoption of some form of legislation that would tend to curb fires from this origin.

In my opinion, painters and others, who use blow torches in their work, ought to be licensed, or required to obtain a permit for each operation of this kind.

Before the license or permit is issued, it should be determined whether or not the applicant is familiar with the torch, is conscious of its dangers, and knows how to operate it with safety.

If a license or permit is required, the local, as well as the out-of-town painter could be brought under control, insofar as use of the blow-torch is concerned.

The law should carry with it a stiff penalty for violations.

J. H. Burke, Chief, Oakland, Cal.: I would recommend that some control be established to cover the hazard of gasoline torches.

I believe that the party or parties doing the burning should be required to obtain a permit from the fire prevention bureau for the use of any torch or equipment for burning or removing paint, and that proper safeguards be established to prevent fires caused from the improper use of this equipment, and finally, that the party or parties doing the burning be held responsible in some way for any damages sustained.

Terence Mulligan, Chief, Sacramento, Cal.: At the present time we have had very little of this practice. However if the practice should increase to any large extent, we feel some control would be advisable.

An ordinance should be enacted which would make the paint contractor responsible for any damage he might cause. This could be done by forcing him to post bond or carry sufficient liability insurance.

R. L. Woolard, Chief, Norfolk, Va.: I would not recommend any form of control by municipalities of fire damage resulting from painters using gasoline torches for paint removal, as I class this as just another careless fire.

I think the common law would give the insurance companies or any other person whose property was damage by negligence of painters doing that work, the right for civil court action in which there would probably be very few convictions.

In the City of Norfolk there are very few fires that are caused by negligence on the part of painters doing that kind of work.

I would suggest that to create awareness of the danger of fire, good publicity in year round fire prevention work be given this hazard.

W. C. Garvin, Chief, Yonkers, N. Y.: I believe that each operator should be required to have a certificate of fitness issued by the Building Department and approved by the fire chief. A fire extinguisher or charged garden hose should be immediately available. The attic or cockloft and perimeter of the building should be checked at frequent intervals for evidence of fire or smoke. A competent person should be required to remain on the premises for one hour after working hours. He should be provided with a flashlight and extinguisher and should in-

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spect every room before leaving premises. The operator and watchman should know the location of the nearest street fire alarm box, the nearest telephone, and telephone number of the fire department. In addition, I believe the contractor and operator (holder of certificate) should be bonded.

I believe all in and out-of-town painter contractors should be required to obtain a permit for each job from the building department or from the fire department in cities that do not have a building department. Stiff fines and imprisonment should be provided for violators.

P. J. Daly, Chief, Toledo, Ohio: I believe that a cash bond should be posted by each individual engaged in removing paint with a gasoline blow torch, to cover any fire loss. I also believe that a city ordinance should be passed embodying the above requirement and also that a permit to do work be issued by the fire prevention bureau.

Frank H. Burns, Chief, Grand Rapids, Mich.: I believe the practice of removing paint with torches should be controlled by state law and city ordinance.

If it was controlled by state law, it would apply to all people doing business in the state regardless of their place of business or residence.

Ninnian Higby, Chief, Detroit, Mich.: As a result of the small number of fires which are caused in this manner, I am of the opinion that there is no need to try to control them, which I am doubtful could be done.

George E. Jacob, Chief, Canton, Ohio: Our expericince with fires resulting from the use of painters torches has been practically nil. We do receive a number of inquiries from painters as to whether or not a permit is required. We always caution them to be careful when using the torch near openings in the siding, eaves and trim, and request that the torch be used by some person familiar with that type of work.

The number of fires resulting from this cause in this city does not warrant city control.

Hoyt M. Ayers, Chief, Birmingham, Ala.: I believe that the fire damage resulting from painters using gasoline torches warrants some form of control by municipalities.

I would suggest that a permit for this type be issued only by the fire department after the fire prevention bureau has made an inspection of the building. Their report should state whether or not the entire building or any part is safe for removing the paint by torch. This ordinance should cover out-of-town painters as well.

Walter G. Strickfaden, Chief, Columbus, Ohio: While we have had very few fires caused by painters using blow torches in removing paint, still I can see the possibilities of fires originating from that source. If in using a torch the lap in the siding is spread, a spark could easily be transmitted between the walls and due to the fact that it would be hidden, it might gain considerable headway before discovery. I do not have the answer on how this could be controlled, because it would entail drawing up ordinances, but there should be enforcement. Probably the best way to control this condition would be to enact a law. This would also take care of the out-of-town painters.

L. D. Blanton, Chief, Tampa, Fla.: I do believe there should be some control over use of blow torches for paint removal, especially on wood construction.

Spider webs form under corner boards where certain types of sidings are used. This is very dangerous especially where skeleton construction is used. Most of our private homes are of this type.

The corners of the house should be filled or stuffed with fire resistant material before a torch is used.

Rigid inspection should be made be-

HERE IS THE TOPIC FOR THE NEXT ISSUE

1. **What special equipment and methods do you employ for controlling traffic in the neighborhood of fires:**
   a. **During the day**
   b. **At night**
2. **Have they proven effective?**
3. **If not, what in your opinion is the solution to the problem?**

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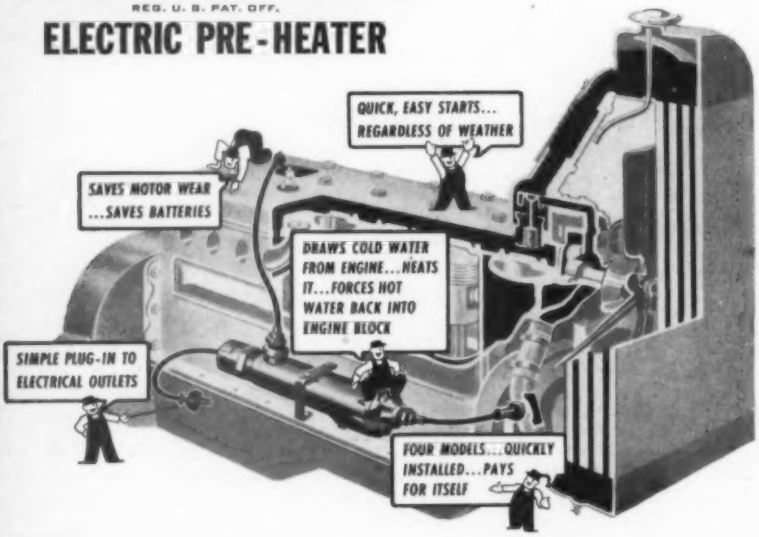
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The KIM Hotstart is particularly valuable in cold or cool weather, but its installation is worthwhile at all times, particularly on engines in vehicles being used on short run or start and stop work. If you operate mobile or stationary engines of any kind—Diesel or Gas—a KIM Hotstart will pay handsome dividends. Literature on request.

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fore a permit is granted for this work, with suitable fines for non-compliance with the ordinance.

We have had three fires from this cause in the last five years.

Connie O'Sullivan, Chief, Memphis, Tenn.: I believe the practice of using blow torches to remove paint should be outlawed by legislating a city ordinance. Incorporated in the ordinance should be the requirement that a permit for all paint jobs must be secured through the building department, said permit will have the ordinance and penalty plainly printed on reverse side.

Through the efforts of the Commercial and Industrial Fire Prevention Association of Memphis, we are endeavoring to point out to key men in various types of industry the danger involved in performing their duties. This includes the subject herein discussed and we believe that we will eventually eliminate this hazard or reduce it to a minimum through this medium.

Frank Egenriether, Chief, St. Louis, Mo.: With the increased use of gasoline torches by many of the trades, in plants, and likewise in the homes, legislation to control only the painting profession undoubtedly would be considered as class legislation, as acetylene, prestolite, petroleum and liquid petroleum and alcohol torches, etc., would be uncontrolled.

Control would necessarily involve a thorough study of each individual case, and, in many instances it would perhaps mean the elimination of the use of any type of torch.

However, utmost safety precautions should be provided at all times where any gasoline torch or other type of torch is to be used. The provision of flameproofed tarpaulins, adequate fire extinguishers of the proper type, water pails and sand is suggested. The residue removed by torch or torches should be removed from all scaffolding and floor area at the close of each work day. The areas involved should be wet down, especially at all joints or any communicating openings.

The control of resident painters alone would be an impossible undertaking and the addition of the non-resident painters would add greatly to the problem.

James T. Blamey, Chief, Spokane, Wash.: I believe that fire damage resulting from the use of blow torches by painters warrants some control by municipalities.

Permits should be required for these operations. Any person using a torch or other flame producing device for removing paint from a building should provide approved fire extinguisher where such burning is done. In all cases, the person doing the burning should remain on the premises an hour or more after the torch is used.

C. C. Styron, Chief, Atlanta, Ga.: This cause of fire has not presented a problem to this department as yet.

Charles H. Knapp, Acting Chief, Baltimore, Md.: The use of gasoline torches for paint removal is not permitted in Baltimore.

Alex M. Andrzejewski, Chief, South Bend, Ind.: We have had some fires from blow torches used to remove paint.

Before starting a job, painters should notify the fire department.

FAMOUS FIRES

"IT'S NOT THE 2nd ALARM THAT GETS YOU, IT'S THE 2nd FIRE."

ATLANTA, GA., MAY, 1917

1st fire: *a cotton warehouse.* 2nd fire: *4 minutes later, a dwelling, ¼ mile west. Spreads to 3 more.* 3rd fire: *15 minutes later, another house, ¾ mile S.E. of No. 1. Spreads to 13 more. THEN, fires all over. Despite help from 18 other cities, the fire burned 24 hours. SCORE: 300 acres burned, 1,938 buildings destroyed, 10,000 homeless, $5½ million property damage.*

No one knows better than a fireman that the best way to handle a fire is to stop it before it starts. And no one knows better the need for first class equipment.

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On the Job Training

To the Editor:

In the June, 1948, FIRE ENGINEERING was an article concerning veterans' on the job training for fire fighters. I would like to know if you could supply me with the names of some schools in cities that a person could enter to get this training. There is no such set-up in this city and I am interested in securing additional training, if possible.

R. E. B.

Answer: Under the G.I. Bill, fire departments desiring to offer on-the-job training to eligible veterans must first obtain the approval of the appropriate State approving agency. Veterans Administration pamphlet ER-1 describes in detail the requirements and qualifications necessary for veterans who wish to train under the G.I. Bill (for the able bodied) and Public Law 16 (for the disabled). This pamphlet and other necessary data may be secured from the Veteran Administration, Washington 25, D.C. which lists the appropriate state agencies.

According to this data, the fire department's first step is to prepare an on-the-job training program that will be thorough enough to train a man for a particular job. The description of the program should cover these six points:

1. The specific job objective for which the veteran is to be trained.
2. Length of time required for training.
3. Method of selecting veteran-trainees.
4. Rates of payment at the beginning, of training, any step-ups in wages that might be given during the training period, and salary after the program is completed. Entrance wages paid to employees who already are trained also should be given.
5. How the program will be administered. This point should include a schedule of the various operations for each major kind of work or task to be learned. The schedule should show for each kind of task the job operations, and approximate length of time to be spent learing them.
6. A complete outline of just what the veteran will be taught during the training.

Fire departments can obtain assistance in preparing their training programs from State apprenticeship councils and from State approving agencies. VA regional offices also can aid by showing examples of approved programs.

After an on-the-job training program has been approved, veterans may be accepted for training. The procedure veterans must follow is covered in ER-1 pamphlet, pages 26 and 30.

The list of educational institutions offering courses in fire protection to veterans contains the names of two such institutions: the Technological Center of the Illinois Institute of Technology, Chicago, Ill. and Oklahoma A and M, Stillwater, Okla.

Hydraulic Questions

To the Editor:

In a recent promotional examination the following questions pertaining to hydraulics were asked. I would appreciate your giving the correct solutions to them.

1. A fire occurs on the tenth floor of a building and ten heads have opened. An engine equipped with a single line of 2½-inch hose is pumping through 300 feet to a siamese connection on the sprinkler. Twenty-five pounds is wanted at the heads. Assuming 12 feet per story, how many pounds engine pressure will be required?

2. The pressure at the nozzle is 60 pounds and a 1¼-inch tip is used. How many feet vertically will an effective fire stream reach?

3. An engine at 225 pounds pressure is pumping through 500 feet of 2½-inch hose with a nozzle pressure of 60 pounds. What is the nozzle diameter in inches?

4. A pumper is pumping through 1,000 feet of 2½-inch hose to which is attached a reducer with a 1½-inch fog nozzle. Engine pressure is 125 pounds. What is the pressure at the fog nozzle? K is .0051.

5. A pumper is delivering water through a 500-foot line of 2½-inch hose. Nozzle pressure is 30 pounds; engine pressure is 95 pounds. Of the four, what kind of applicator would be discharging? A Bresnan distributor, a fog nozzle, regular nozzle or a deluge set nozzle? W. J. M.

Answer 1: Discharge per head $(\frac{1}{2} \times 25) + 15 = 12.5 + 15 = 27.5$.

Discharge from 10 heads $= 10 \times 27.5 = 275$ gallons per minute.

The friction loss in a sprinkler system is taken at 25 pounds.

Back pressure $= 12 \times 10 \times .434 = 52.08$ pounds. (Note: The sprinkler heads are on the ceiling of the tenth floor, so that they are approximately ten stories above the street.)

Friction loss in 100 feet of 2½-inch hose carrying 275 gallons per minute $= 2 \times Q \times Q + Q$, where Q is the flow in hundreds of gallons per minute.

$= 2 \times 2.75 \times 2.75 + 2.75$

$= 17.87 = 18$ approximately.

The friction loss in 300 feet would be 3×18, or 54.

The engine pressure will then be equal

to the pressure at the heads plus the friction loss in the sprinkler system plus the back pressure plus the friction loss in the hose line, or

$$E.P. = 25 + 25 \div 52 + 54 = 156.$$

Answer 2: The pressure is above 50 pounds and the nozzle, 2/8 larger than the 1-inch nozzle, 2 × 2, or 4, must be subtracted from the 15 in the formula, which, for this example, will read:

$$H = \sqrt{240p - p^2} - 1900 - 11 = \sqrt{240 \times 60 - 3600} - 1900 - 11 = 94.3 - 11 = 83.3 \text{ feet}$$

Answer 3: The engine pressure is 225 pounds and the nozzle pressure, 60 pounds. The friction loss is therefore 225 — 60, or 165 pounds, for the 500-foot stretch.

The friction loss per 100 feet is 165 ÷ 5, or 33 pounds.

The flow (in hundreds of gallons) is

$$\frac{1}{2}\sqrt{2 \text{ F. L.}} - .25 = \frac{1}{2}\sqrt{2 \times 33} - .25 = \frac{1}{2}\sqrt{66} - .25 = \frac{1}{2} \times 8.12 - .25 = 3.81, \text{ or } 381 \text{ gallons.}$$

This is the flow through the line which will give 33 pounds friction loss per 100 feet.

The formula to find the nozzle diameter where the flow and nozzle pressure are known is as follows:

$$D^2 = \frac{Q}{29.7\sqrt{P}}$$

Where Q in this case is measured in gallons per minute rather than hundreds of gallons per minute.

$$D^2 = \frac{381}{29.7 \times \sqrt{60}} = \frac{381}{29.7 \times 7.746} = \frac{381}{230} = 1.66$$

D then equals the square root of 1.66, or 1.29 inches.

The nearest standard size nozzle to this diameter is 1¼ inches, which is 1.25 inches in diameter. Therefore the nozzle is a 1¼-inch nozzle.

Answer 4: Nozzle Pressure = Engine Pressure ÷ (1.1 + KL)

Engine Pressure is 125 pounds.

K for 1½-inch fog nozzle on 2½-inch hose is .0051

$$L = 1{,}000 \div 50 = 20$$

Then $N.P. = 125 \div (1.1 + .0051 \times 20) = 125 \div 1.202 = 104$ pounds

Answer 5: If a Bresnan distributor is used in this layout, the calculations are as follows:

N. P. is 30 pounds.

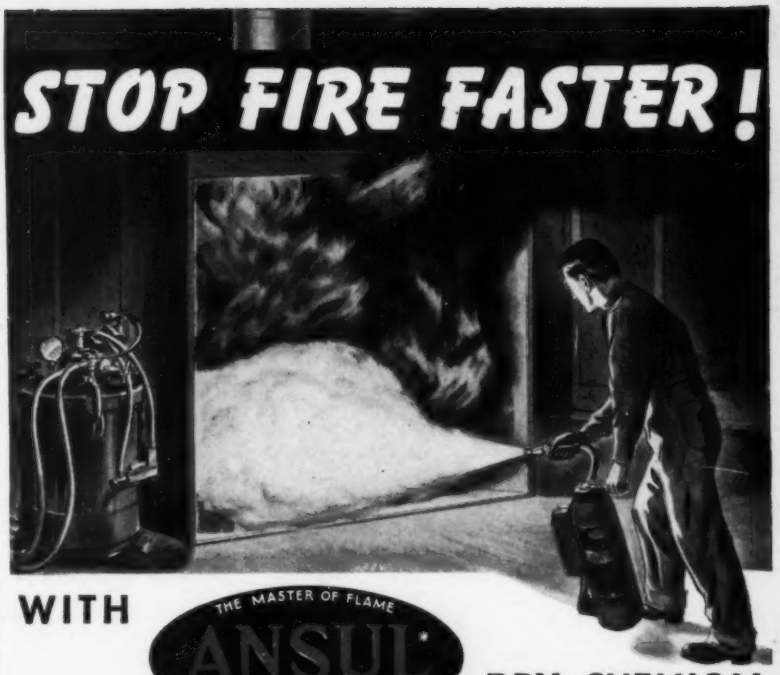
K for Bresnan distributor on 2½-inch hose is 0.207.

$$L = 500 \div 50 = 10$$

Then $E.P. = 30 \times (1.1 + 0.207 \times 10) = 30 \times 3.17 = 95$ pounds.

Thus it may be seen that the Bresnan distributor fits the layout exactly, having 30 pounds nozzle pressure when the engine pressure is 95 pounds.

If a regular nozzle were used, 95 pounds at the engine, for a 1⅜-inch nozzle, would give a nozzle pressure of 30 pounds only if a 600-foot line of hose were employed. If a 1¼-inch nozzle were used, and the engine pressure remains 95 pounds, the line would have



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Ansul Dry Chemical Fire Extinguishers give you more protection . . . pound for pound . . . dollar for dollar . . . than any other extinguisher of comparable size.

In addition . . . Ansul Fire Extinguishers provide the best first-aid protection:

- For paint spraying and dipping operations.
- For hazards involving alcohols, solvents, gasoline, oils, asphalts and greases.
- For electrical equipment hazards.

Ansul Fire Extinguishers have the highest ratings for effectiveness on flammable liquid fires, based on tests conducted by nationally recognized approval agencies. The longer range stream of dry chemical is effective in winds and drafts.

After use, Ansul Dry Chemical Fire Extinguishers can be recharged "on the spot" . . . providing continuing protection . . . and annual recharging of Ansul extinguishers is *NOT* necessary.

Safe to use . . . non-toxic, non-corrosive, non-abrasive.

Ask for your copy of file No. 223. You will receive factual data on how Ansul Dry Chemical Extinguishers will cut fire protection costs in your plant.

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to be 400 feet in length to get a nozzle pressure of 30 pounds. Thus it will be noted that a regular nozzle would not suit the problem.

With a fog nozzle, of the three types commonly listed, the discharge ranges from 20 to 100 gallons per minute at a nozzle pressure of 30 pounds.

If we assume that the nozzle pressure is giving 100 gallons per minute at 30 pounds, the friction loss will then be, for 100 gallons per minute, 2.5 pounds per hundred feet. For 500 feet the friction loss will be 12.5 pounds. Nozzle pressure plus friction loss gives engine pressure, or 30 + 12.5 = 42.5 for the engine pressure. This pressure is, of course, less than 95 pounds and therefore the fog nozzle would not fit the layout.

With regard to a deluge set, if it were operated on a single line of 2½-inch hose, employing a fairly small size tip, there would be negligible difference in engine and nozzle pressures if the layout is identical in each case, and if the tip is the same in each case. Thus the deluge set would fall into the same category as a "regular nozzle" and would not give 30 pounds nozzle pressure where the engine pressure is 95 pounds, with the given layout.

Thus the only "applicator" which fits the specifications is the Bresnan distributor.

August Fire Losses

Although fire losses in the United States are running at record high levels, a slight seasonal decrease was recorded in August, 1948, it was announced by W. E. Mallalieu, general manager of the National Board of Fire Underwriters. August losses were estimated at $49,543,000, a decrease of 2.7 per cent from losses of $50,955,000 in July.

August's losses were 3.5 per cent below the estimated waste of $51,359,000 recorded in the same month last year.

The slight decrease should give the nation little cause for complacency, Mr. Mallalieu said. Fire losses always have declined during the summer months, and have soared again during autumn and winter months as more and more stoves, furnaces and fireplaces are operated during cold weather, and heavier strains put on electrical circuits.

The threat of severe forest fires due to prolonged dry weather in the Northeastern and other states also calls for utmost caution to prevent repetition of the disastrous conflagrations that occurred in Maine last year, he said.

August's losses brought the total for the first eight months of this year to $486,978,000, a sum greater than losses for the entire year of 1945. For the past twelve months, the fire losses totaled $709,621,000, an increase of 8.6 per cent over losses of $653,156,000 for the 12-months period ending Aug. 31, 1947.

The fire loss estimates are reported under fire insurance policies and include an allowance for uninsured and unreported losses.

Television

(*Continued from page 687*)

the cause of the fire. The sprinkler system put out the fire.

"The last known time the radio was used was at approximately 8:00 P.M. the previous evening. All indications show that the radio was left on. Owner admits that he did not know whether or not he shut it off. The lapse of time between 8:00 P.M. and 4:21 A.M. was 8 hrs. and 21 min.

"The radio was set on a table, the top of which was 21 in. x 16 in., and the measurements between legs on set is 21 in. and is 18 in. wide.

"There are two ports in the bottom of the set for ventilation but these were covered by the table top, thus eliminating any ventilation on bottom of set. There were two burned spots on table top; also, a cardboard poster was against back of set which further stopped ventilation there.

"There are no fuses in set on the A.C. line; also the A.C. source for set was fused at 30 amps.

"Pictures were taken at each step in the investigation. Fig. 1 shows the set as it was taken from the fire before anything was disturbed. Fig. 2 was taken with set tipped so that the bottom of cabinet shows and also the underside of top of cabinet.

"Fig. 3 is a close-up of the start of the fire. Fig. 4 is of the underside of the set itself after being removed from the cabinet. Fig. 5 shows section of set housing high voltage supply. Fig. 6 shows the inside of cabinet with set removed, indicating fire started underneath high voltage supply. Fig. 7 is high voltage section with cover removed.

"Fig. 8 is of the tube that apparently caused the fire. It was determined before set was removed from cabinet that the start of the fire was in the lower right hand corner looking from the back. It was also noted that the picture tube

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FYAWET has been used successfully on rubber . . baled cotton . . grass . . hay . . brush . . wood . . on the farm . . in the mill . . in the home.

FYAWET has been laboratory tested and field tested for three years. It is now available for the first time to municipal, industrial and volunteer fire departments.

Write today for information on FYAWET; supplies are obtainable through leading fire equipment dealers.

ALROSE CHEMICAL CO.
PROVIDENCE 1, RHODE ISLAND

(FYAWET distributor agencies still available in some territories)

had been broken before the arrival of fire department. Upon careful check of glass it was determined that cold water from sprinkler system falling on the hot tube shattered it.

"The high voltage section cover has a port from which tubes can be removed. In looking into this section the oscillator tube plate had a burned spot on it. This can be seen in Figs. 5, 7, and 8. The set was then removed from the cabinet and turned over. It was very evident then that the fire started under the high voltage section.

"The position of the wires and their color and the condition of chassis indicated the exact location where the fire started. This section was near the base of the 5 V 4 G rectifier tube. The fire started here and ignited cabinet base, then in turn crept under chassis (right hand edge) to the open space at the right and on to the top of the cabinet.

"There were no resistors on condensors attached to this particular section as they had all been burned so badly that they were on the bottom of the set. No check could be made to see if they were shorted.

"The oscillator tube of the high voltage supply had burned spots on the plate. These spots were caused by arcing in the tube. In this type of circuit when burn spots occur the tube will draw more current.

"This higher current places a greater load on the rectifier J V 4 G tube. The rectifier tube will also draw more current and after a period of time will become heated and probably be shorted, thereby causing wires leading to the tube to become very hot.

"This finding indicates that the set was definitely left on, as it would take two to three hours to start a fire under these conditions. There is no way of knowing the exact time that elapsed between the time the owner left store and the time the set broke down.

"I believe that had the A.C. line been properly fused and also set had been allowed proper ventilation, this fire might not have occurred."

Preventive measures are: Keep sets well ventilated in all installations, including the demonstrating sets in the store.

Most insulation on the high voltage parts is flammable and recent recommendations call for enclosing them in metal, to prevent spread of a fire within the component. However, enclosed parts develop heat, which complicates this problem.

Limits for the maximum temperatures of individual components have been established by the UL, so that in case of a ground or short within the set, the temperature will not climb so high as to set fire to the cabinet or to any object, such as curtains in contact with the set.

Since cathode ray tubes are relatively large and are operated at high vacuum, another hazard listed is "implosion"—i.e.: the inward rupture of the tube, with resultant possibility of flying glass. For this reason, protection of the tube on all sides is advised. The tube face should be screened with a sheet of shatterproof glass and all enclosures should be in place when the set is in operation. Breakage in the case of smaller tubes is relatively rare.

In a sharp implosion, the force of the external air impels the glass into the tube and out the other side. It might result in ripping out the back of the set.

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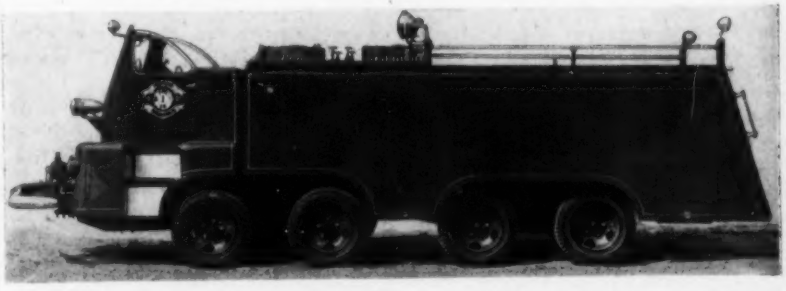

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Because the prosphor powder in video tubes contains a beryllium compound, it is also considered advisable for anyone who is cut by the flying glass to have the wound promptly treated by a physician, and to explain to him that the cut resulted from glass treated with a beryllium compound.

Inasmuch as masts are placed as high as possible, the lightning hazard may be increased as a result of antenna installations unless the proper precautions are taken. Such installation should be in accordance with Article 810 of the National Electrical Code. Metal towers should be properly grounded, preferably with at least a No. 6 American wire gauge conductor. The shield of the concentric or coaxial cable should also be grounded, where used.

Modification of present standards are reported to be under advisement and it is expected that a prescribed set of standards will be evolved at an early date.

Conclusions

Thus far we have discusséd television from the standpoint of hazards. There is another important side of the picture.

Television, because it has video, or eye appeal as well as audio, opens up an entire new field of promotion for the fire service. This very factor, which can make it such a boon, can likewise, convert television into a curse for the fire fighter.

The fire service has already complainèd about haphazard and thoughtless broadcasting of fires and other emergencies. Resolutions have been passed by the International Association of Fire Chiefs and its affiliates decrying mass newscasting which has resulted in mass movements of the curious to the scene of emergencies, with resultant traffic jams, blockades, and interference with fire fighting operations.

The thought was advanced by one fire chief that television would be a blessing in this respect, because it would enable the curiosity seekers to remain at home and watch the progress of a fire or other incident. That reasoning may have weight but, on the other hand, no telebroadcast can hope to picture the disaster, whether fire, flood or hurricane, as it really is, and as an observer hopes to see it. It is possible, therefore, that the televising of a fire for example, may sufficiently whet the appetites of the video audiences, to encourage them to hop in their cars and head for the scene. Time will tell.

Already television is broadcasting the picture story of how fires are fought. Firemen's tournaments, and parades are finding their way onto the television image. Much, if not most of this is "good public relations" for the fire service. It can be made still better by some careful cooperation between television studios and heads of our fire departments.

Television has proved a boon in furthering fire prevention programs. It goes much further than radio could ever help to go, in taking the video audience right into the plant, or home or store, where fire occurred, and *showing* them the actual evidence of carelessness and thoughtlessness, rather than merely telling them about it. Television *dramatizes* the story. It can dramatize the fire service, if properly used.

Another great unexplored field is in firemanship training. Television may eventually prove the greatest training tool the fire service has ever had.

Perhaps it is a good augurv that the first oudoor television newscast ever made was that of a fire on the banks of the East River, New York City not so many years ago!

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IN FIRE HOSE...

COTTON RUBBER LINED — the *quality* hose with an unequalled reputation for strength, durability and safety. Backed by 78 years of hose-building experience. Flexible, light in weight, easy to handle. Single or double jacket, all standard sizes.

In the same *quality* class — Goodall booster hose, suction hose, underwriters' unlined linen.

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STYLE "SSS" BOOTS — for super-severe service, *plus* comfort. Made of tough black rubber, with slip-proof soles, "ladder shank" arch supports and other *quality* features.

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Est. 1870

World Wide Fire News

By Roi B. Woolley

RAF Marks "Victory Day"—15 Killed

Before a crowd of 15,000 persons at the Battle of Britain air display at the Manston RAF Base, near Margate, Kent, Sept. 18th, a twin-engined Mosquito bomber, performing aerial acrobatics, suddenly dived out of control into a bank of parked cars and cycles, killing ten persons and injuring fourteen, thirteen of them seriously.

As the plane struck the first vehicle, it started to burn from nose to tail. The fire spread to the motor cars so swiftly, it trapped occupants who perished in their blazing vehicles; more who were slow in escaping from closed cars or were standing watching the aerial show were injured. The red hot wreckage of the plane rose in the air and fell on persons and vehicles, adding to the tragedy. A thirty-two seat bus was hit and most of the passengers inside were injured.

Witnesses said the plane that crashed was a leader of a flight of three engaged

in formation flying. At the end of this flying, the leader began a single display of high speed acrobatics, twisting, turning and looping the loop. In making his second run over the aerodrome, according to a witness, the pilot dived to within 100 feet of the ground, traveling an estimated 400 miles an hour. Next, he climbed to 800 feet, then started a slow roll; he had completed half of this when he appeared to lose control. He suddenly dived straight for the ground and the plane burst into flames.

As the craft struck the ground it skidded along a road packed with vehicles, knocking them in all directions. The explosion of the plane's fuel tank spread the fire.

In another accident, two airmen died when their Mosquito crashed while practicing for a show at Coningsby Airfield, Lincolnshire.

Two more flying officers were killed when a third Mosquito crashed and burned at the Lichfield RAF station.

A Spitfire pilot was killed when his plane blew up at the bottom of a dive in an air show at Leuchars, Fife.

* * *

Fatal Guam Gasoline Storage Blast

The U. S. Navy gasoline storage depot on Guam was turned into an inferno in August when a series of explosions accompanied by fire devastated the huge aviation and mobile gasoline tank farm, five miles from Apra harbor.

Three sailors, one a chief petty officer, were killed and one reported missing. Another was critically burned. The petty officer died in a vain attempt to save an enlisted man, trapped by the flames that roared uncontrolled for hours.

Unofficial reports said the initial blast was caused by a spark from a jeep that entered the area where a gasoline storage tank had overflowed.

* * *

Toronto Adopts Hotel Safety Act

The Ontario, Canada, Government has passed legislation which it is believed will help minimize the fire dangers in hotels and other like public institutions. Insurance companies are said to have endorsed the legislation which contains these five point statutes:

1. All future hotels over two stories in height must be of fire resistive construction throughout and have enclosed stairwells.

2. All existing hotels are required to enclose stairways or elevators going above the second floor, and to install smoke-proof barriers where required. For these enclosures, steel sash and wired glass or one-inch lumber or the equivalent in fire resistance will be accepted as satisfactory construction.

3. All hotels, both existing and future, will be required to have at least two good means of exit from every floor.

4. Adequate alarm systems are compulsory for all hotels and discretionary authority is given to require automatic sprinkler or fire detection systems.

5. Hotel proprietors must immediately call the local fire department whenever any fire is discovered.

New regulations, it is reported, will set up enforcement machinery in which it is planned to extend to municipal fire chiefs much the same authority to enforce the Hotel Fire Safety Act as they already have to deal with fire hazards generally, within the municipality under the provisions of the Fire Marshals' Act. This will supplement the inspection

TIME: November 9-12, 1948

PLACE: **Booth 13,** International Association of Fire Chiefs Convention, Miami, Florida.

If you can't attend the convention this year, write today for descriptive literature covering these and many other important items.

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authority over hotels of the hotel inspectors under the liquor license act and the staff of the fire marshal's office. The new regulations cover all hotels, whether licensed or not, and include summer hotels.

* * *

Olympic Torch Had to Be "Fire Proof"

The Olympic Torch, which "touched off" the recent Olympic games in Britain, presented a number of problems dealing with fire, and the fire hazard.

As early as December, 1946, Britain began to wrestle with the problem of designing the torch. The Olympics Organizing Committee consulted the Fuel Research Station, part of the Department of Industrial and Scientific Research.

The specifications were stiff. Each torch (there were 1,600 runners who carried it on the route across Europe) had to be light, to enable runners to carry it at top speed. The flame had to be bright but not smoky. And it had to withstand all kinds of weather. The fuel had to ignite easily, yet the fire risk had to be reduced to the minimum because the torches had to be stored at numerous places en route before the commencement of the run. Lastly, the construction had to be such that each torch could be easily lit from its predecessor.

Mr. L. R. B. Shackleton of the Field Research Station, made many experiments with sheet-metal torches and various fuels and decided to use hexamine tablets. They burn with an almost invisible flame. To make it visible, 6 per cent naphthalene was added. The requirements for the torch were met in final trials at Greenwich.

In the final model of torch of die-cast aluminum alloy, seven tablets were enclosed in a perforated cylinder with an inner sleeve that concealed the lower three tablets. As the upper tablets burned away, the lower were pushed up into the burning zone by a spring. To facilitate lighting, a tablet of nitrate compound was placed on top of the fuel pack. A quick-match for ignition protruded through the perforated container.

Because the torches had to be transported to various countries, the fuel tablets were enclosed in a nitrocellulose envelope which burned away immediately upon ignition, with no carbon residue. The perforated metal fuel container was also capped and sealed with adhesive tape. These precautions were taken to preserve the fuel and avoid the risk of accidental ignition.

Adapted from Waldemer Kaemfert in the *N. Y. Times.*

* * *

Capitol Roof Fire Quelled

Spotlights that illuminate the Capitol dome in Washington, were blamed for a small blaze that flared briefly the night of August 30th, resulting in a short but successful operation by the District of Columbia Fire Department, and a traffic jam caused by excited motorists who headed for the scene.

A short circuit in the wiring set fire to some painting equipment being used to spruce up the Capitol. The small fire, which broke out on the roof of the wing of the historic structure on the west side of the dome, facing the Mall, was fed by tar, paint and trash. A box alarm brought a full first alarm assignment of District firemen. There was no call for additional help.

Observers from office buildings, some distance from the Capitol, spotted the flames at the edge of the dome, and many headed for the scene, joined by motorists also attracted by the responding apparatus, and the signs of the fire.

All-in-all it was nothing new to District firemen, who have responded to numerous previous alarms from the old building, and who have well defined predetermined attack strategy for controlling any blaze that might ensue in that and other historic Washington structures.

* * *

Hot Off the News Ticker

The Cunard White Star refrigerator ship Asia, 8,700 tons, in dry dock at Southampton, Eng., following a collision, suffered her second mishap in a fortnight when fire broke out in the hold. Firemen, using masks because of the heavy smoke, controlled the flames within an hour. . . . In Stockholm, Sweden, when lightning struck a motion picture studio there, setting it on fire and partly destroying it, the owners turned the disaster to good purpose. They shot views of the flaming wreckage to use in a forthcoming "atomic war" film. . . . Five workers were killed and two badly injured in an explosion at the Saaewellingen, Germany, dynamite works. The blast leveled one building and badly damaged others. . . . New York State Guardsmen shoveled coal from a bin at the 13th Regiment Armory, Brooklyn, when fire of undetermined origin broke out nearby, city firemen put out what they termed a "pesky blaze." . . . At Atherstone,

It's NEWS

THAT LADDERMEN DON'T HAVE TO CARRY VICTIMS DOWN LADDERS — *THEY LOWER THEM WITH SAFETY AND FASTER ON A —*

DAVY AUTOMATIC FIRE ESCAPE

THE "DAVY" is an absolute necessity in every fire department! It saves firemen — saves time — saves effort — saves lives! Just hook it to a ladder rung — put strap around the victim — that's all there is to it. It lowers the person (child or adult) at about two feet per second — safely — while another strap is waiting for the next person to be lowered. It will lower five persons in less time than it takes one fireman to climb a ladder and bring back one victim. Where persons are hysterical or unconscious, the "DAVY" eliminates carrying them down ladders.

The "DAVY is *100% automatic* — requires no manual manipulation. The brake mechanism is sealed in a round container about 6" by 2", with steel-cored cord neatly coiled below the container. Carries one person from 20th floor in about a minute. A strap at each end means the "DAVY" is ready to lower another person as soon as the first one reaches the ground, and so on until all persons are rescued.

DEALERS

Fire Depts. everywhere are in immediate need of the "DAVY" Automatic FIRE ESCAPE. Sell one model to all fire depts., sell another model to hotels, etc. Write for dealer proposition.

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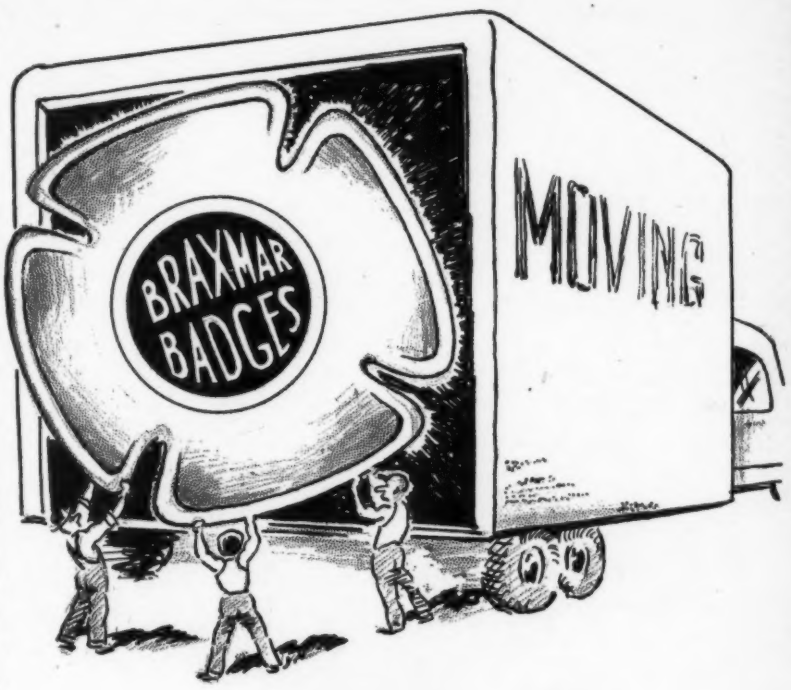
England, cricketer Denis Plumb fielded a red-hot catch. The ball hit a box of matches in his pocket and started a fire. He had to take off his pants to cool off. . . . Irate passengers set fire to the Clemente Falcao railway station, Sao Paulo, Brazil, and to the remains of two trains that had collided head-on, injuring 40 passengers, eight seriously. Firemen "subdued the crowd by playing hoses on them." . . . In London, England, a warehouse porter was dismissed from his job because he helped himself to a cent's worth of "red" gasoline for his cigarette lighter from the tank of one of his firm's delivery trucks. Dismissal resulted in a walkout of 150 employees. "Red" gasoline is colored for commercial use, in Britain and penalty is severe if it is found in the tank of a private automobile. . . . Firemen of White Plains, N. Y., and a demolition squad from Ft. Slocum, New Rochelle, N. Y., were summoned when two boys found an army hand grenade (from which the pin had been pulled) in a suitcase in front of a house. . . . A Picatinny arsenal employee was killed Aug. 13, 1948 in explosion of smokeless powder in a building in which he was lone worker. The long, low, one-story structure was badly damaged, Army reports said. The arsenal is at Dover, N. J. . . . A loud noise, and column of dust rising in the vicinity of the Navy electronics lab in the Point Loma area near San Diego, Cal., the night of Aug. 30, startled nearby residents. Navy spokesmen said there was no explosion and refused to tell what had happened because "it's classified." One engineer, who heard the noise and saw column of smoke or dust which rose 150 feet, said there was a "terrific screaming noise like a jet engine when it's opened." . . . Officials of the French Air Force scientific bureau reported in August the remains of a radioactive cloud have been hovering over Puy de Deome Mountain near Clermont-Ferrand, France, since the atom bomb test at Bikini, June 30, 1946. They've conducted extensive aerial research in the atmosphere around the 4,500-foot peak and describe the cloud remains as "feeble" but were able to detect the existence of radioactive particles by using precision instruments. . . . A strong offshore wind aided volunteers to control a fire in the Kodiak, Alaska, fisheries cannery, Fort Bailey, 50 miles northwest of Kodiak, Aug. 17, 1948. A Coast Guard plane was flown to the scene and its pilot reported no casualties. First reports said an SOS was sent out requesting aid in evacuating village residents and cannery workers.

What's Burning

THE following list includes fires of $10,000 loss and over in the United States and Canada for the month of September, 1948.

Month Ending September 30, 1948

Eatontown, N. J.—Crystal Brook Inn, a restaurant and tavern, Route 35, north of main entrance to Fort Monmouth, destroyed.
New York, N. Y.—Factory bldg., East River, Astoria, Queens, damaged.
Cleveland, Ohio—Rocky River Greenhouse Co. damaged.
Tacoma, Wash.—Wooden screen, Forman's Auto-Vue Drive-In destroyed. Defective wiring.
Louisville, Ky.—Bldg. occupied by Kentucky Paper Box Company and Finger Paper Box Company damaged.



We Have Moved!

The best badge money can buy! Braxmar Badges have been standard with firemen for 69 years. You can now order badges in nickel, chrome, sterling silver, rolled gold, gold plate and solid gold.

If you have not received our latest circular, we'll be glad to mail one on request.

New Address

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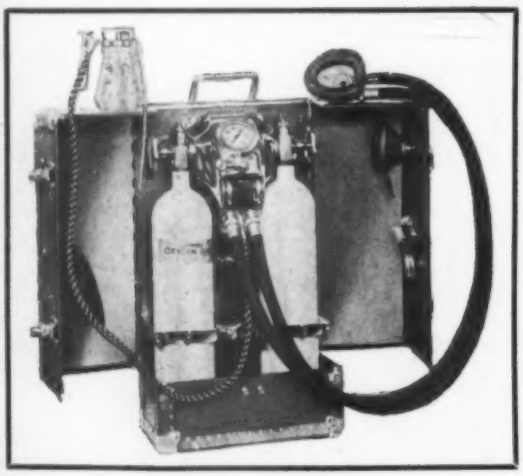
BRAXMAR BADGES

Standard for Over 69 Years

Appleton, Wis.—Fruit and vegetable whse. of Cohen Bros., destroyed. Gas explosion.
Eau Claire, Wis.—Hansen Furniture Store destroyed. Three adj. business bldgs. damaged.
Edinburg, Ind.—Hill Bros., Inc., wood veneer mill, damaged.
Calgary, Alta.—Oil well of Atlantic Co., Leduce Field, destroyed.
Calgary, Alta.—Bldg. occupied by Canadian Fairbanks Morse and Electrcial Contracting & Machine Co., dsetroyed. Paint remover.
West Haven, Conn.—Factory of Metal Products Corp. destroyed.
Au Gres, Mich.—Johnson bldg., occupied by bar, electrical appliance store, variety store and apts., damaged.
Wilmington, N. C.—NACO fertilizer plt. destroyed.
Toledo, Ohio—Gulf Service Station destroyed. Explosion.
Medford, Ore.—Herman Bros. Lumber Co. destroyed.
Medford, Ore.—Best Lumber Co. destroyed.
Salem, Ore.—Salem Meat Packing Co. destroyed.
Vale, Ore.—New Plymouth Potato Flour Producing plt. destroyed.
Pasadena, Tex.—Pasadena Lumber Co. damaged. Acetylene hose ignited.
Newport, Wash.—Rex Theatre destroyed.
Kelowna, B. C.—Kelowna Growers Exchange bldg. destroyed.
Atlanta, Ga.—Rivers School, Fulton County, destroyed.
Caribou, Me.—Automobile repair shop of Beaulieu and St. Germaine and two business-apt. bldgs. destroyed. Cary Memorial Hospital, whse. of Dead River Oil Co., General Supply Co., Fort Western Tire Co. and three dwellings, damaged.
Richmond, Mich.—Richmond Mfg. plt., toy mfrs., destroyed.
Lake Placid, N. Y.—Summer home, Camp Askenonta, Mose Island, owned by Berri W. Schwabach, destroyed.
Willoughby, Ohio—Locker-room-guest house of Kirtland Country Club, destroyed.
Winipeg, Man.—Canadian Natl. Railway Trestle Bridge destroyed.
Winnipeg, Man.—Bldgs. owned by Arctic Ice Co., destroyed.
North Bay, Ont.—Woodworking and planing mill of William Schewe, Winifield Township, destroyed.
Parry Sound, Ont.—Three stores, three apts., law office and hairdressing firm, destroyed.
Notasulgia, Ala.—Grammer school wing of Macon County High School destroyed.
Red Bluff, Cal.—Grain elevator of Macey & Co. destroyed.
Chicago, Ill.—E. J. Brach & Sons Candy Co. plt. damaged.
Flint, Mich.—Main plt. of Mobile Trailer Co., destroyed.
Pontiac, Mich.—Three dairy barns on farm of Bert Williamson, destroyed.
Raleigh, N. C.—Security Roofing & Supply Co. destroyed.
Pittsburgh, Pa.—Planing mill of Allison Park Lumber Co. destroyed. Business-apt. bldg. destroyed.
Titusville, Pa.—Mill of Eager Beaver Lumber Co. damaged.
York, Pa.—Paint and paper whse. occupied by Andrews Paper Co. and York Paint & Hardware Co., destroyed. Defective wiring.
Burrillville, R. I.—Dairy barn at Aura Poultry Farm, Mapleville, destroyed.
Trenton, N. J.—Cafeteria of Trenton State Teachers College, Hillwood Lakes, Ewing Townships, destroyed.
Twin Falls, Ida.—Shirley and Mendiola Clothing Store, Douglass Hotel, destroyed.
Salisbury, Mass.—The Dodgem, Clark's Lunch and Cushing Hotel, all at Salisbury Beach midway, destroyed. Kerosene barrel.
Barnaby, B. C.—Riverside Shingle Mills, destroyed.
Victoriaville, Que.—Nine dwellings, destroyed.
Los Angeles, Cal.—Chrysler Corp. plt. damaged. Explosion in baking oven.
Miami, Fla.—Howard Pure Lead Products Company plt. destroyed.
Cassopolis, Mich.—Six bldgs. in factory grounds of Terra-Cruiser Trailer Co., destroyed. Two bldgs. damaged.
Greensburg, Pa.—Henry Pringing Company damaged.
Abindgon, Va.—Steam laundry destroyed; Journal Virginian newspaper and shoe repair shop damaged.
Rockland, Ont.—Woolen mill owned by G. A. Martin destroyed.
Madera, Cal.—Woodworking and agricultural mechanics shop bldg. at Medera Union High School destroyed.
Riverton, Wyo.—Garage and whse. at United States Bureau of Reclamation Hdqts. destroyed.
Amarillo, Tex.—Amarillo field hangar and contents, including planes and automobiles, destroyed.
Salem, Ore.—Lakebrook Hop Yards destroyed.
Lawrence, Mass.—Paradise Restaurant damaged.
Mt. Holly, N. J.—Surplus depot, two whses. and four small bldgs., two miles east, destroyed.
Hillsboro, Ore.—Tualatin Valley co-operative grain elevator destroyed.
Norfolk, Va.—Jacob Leitman's Exchange Sales Co. destroyed. Sparks from passing train.
Tahlolah, Grays Harbor, Wash.—Indian Service garage and contents destroyed. Explosion of gasoline containers.
Fairbury, Neb.—Livestock sales barn, one mile south, owned by Jack Williams, destroyed.
Klamath Falls, Ore.—Box factory of Chiloquin Lumber Company destroyed.
Stratford, Ont.—Factory of Sealed Power Corp. of Canada, destroyed.
Florin, Cal.—Florin Planing Mill destroyed.
Windsor, Ont.—Freight shed of Canadian Pacific Railway destroyed. Supply of newsprint of Windsor Daily Star, destroyed.
Idylwild, Cal.—Four bowling alleys, snack bar, amusement arcade, bicycle concession and bathhouses, destroyed.
Saratoga Springs, N. Y.—Plt. of Saratoga Dry Cleaning Company destroyed.
Lantan, Fla.—Lake Worth marine ways and nineteen boats, destroyed. Explosion.
Pittsburgh, Pa.— Palley Mfg. Co. damaged. Spark from power hoist.
Orem, Utah—Fruit packing plts. of Orem Peach Growers Assoc. and E. O. Muir Co.; three train cars of American Refrigeration Co. and 1,000 bushels peaches on loading platform and train caboose of Denver and Rio Grand Western Railroad, destroyed.
Mendon, N. Y.—Three barns, seven head of cattle and 9,000 bales of hay and straw destroyed on farm of James T. Holahan.
Spencerport, N. Y.—Barn on farm of Meyer A. Miller, destroyed.
Spencerport, N. Y.—Barn of J. M. Colby, including grain, tractors and milking machinery, destroyed.
Seymour, Ind. — Paper mill, Brownstown, destroyed.
Scoharie, N. Y.—Feed mill of Ernest A. Howard, Central Bridge, destroyed.
Waco, Tex.—J. C. Penny Dept. Store damaged.
Pearland, Tex.—Motor company bldg. and a small bldg. of R. V. Kleising destroyed.
Spokane, Wash.—Stone's dairy, home, and barn, destroyed. Spontaneous ignition.
Columbia, S. C.—Storage whse. destroyed.
Ridgeway, Ont.—Detenbeck Electric Shop, Morningstar Plumbing Shop, Scottish Woolens Shop, Roberts Electric Store, McMooran's clothing store and rear of Camaratt's fruit store, damaged.
Marengo, Ill.—Barn on farm No. 60 of Curtiss Candy Company, destroyed.
Kennewick, Wash.—Kennewick Airport damaged.

Use the STEPHENSON RESUSCITATOR

You Can Do a Better Job Of Resuscitation



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All four functions performed by the one machine.

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When treating patients affected by submersion, gas poisoning, smoke suffocation, electric or physical shock, or other asphyxia, you are able to do a better job with the Stephenson Resuscitator. With this machine you can control the operating pressure to a point most beneficial for the patient. Diluting oxygen with air not only conserves oxygen, but also aids the patient. Extend your survey also to cover life saving equipment.

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It will help if you will mention FIRE ENGINEERING *when writing advertisers*

Communications

(Continued from page 697)

time in answering and passing on the telephoned message to other interested people. The third involves the reduction in transmitted volume that takes place when the fire headquarters operator attempts to talk over several lines at the same time. Time is lost again because he cannot start his message until all parties have answered.

The use of loudspeakers and voice amplifiers overcomes these difficulties. By reproducing the message over one or more amplifiers for all interested persons to hear at once the disadvantages of the ordinary telephone are overcome. No time is lost in picking up a telephone receiver and every man concerned is reached simultaneously.

With the rapid growth of radio broadcasting and sound motion pictures, loudspeakers and amplifiers of high quality were developed, and these first found application to the fire service in the early 1930's. In 1935 the Gamewell Company started manufacturing specially designed amplification equipment for fire communications, and two years later a standard line of high level voice communication equipment was introduced and designated by the trade name "Vocalarm." Since that time many fire departments have adopted high level voice communication systems, with eminently satisfactory results.

Over a period of years improvements in product and its application have been made to reduce noise interference to the minimum, increase tonal qualities and reduce installation and maintenance costs. Today, there are available single or dual channel, two-way systems permitting communications between headquarters and selected points. The latest equipment has higher power output of both receiver and transmitter, permitting the receiver to be equipped with a second loudspeaker at slight extra cost.

Amplifiers may be mounted on walls, or on brackets or desks. The loudspeaker is separate from the amplifier proper so that it may be mounted in the most advantageous place for best sound distribution. There is also a choice of mediums—horn-type loudspeakers may be used where there are large areas. Transmission equipment occupies little room (no more than the space required for a standard telephone desk set).

In fire department alarm transmission, the accepted practice is to precede the voice message with a prefixed gong or other audible signal* indicating the voice message to follow. This encourages discontinuance of possible intermediary noises such as running motors, etc. and focusses attention on the voice message. The method and form of broadcasting the message itself may vary as desired. In an alarm of fire, such as a still alarm, it is the custom to designate the fire department units for which the message is primarily intended; the nature of the incident—a fire and the location. Voice alarm transmission has particular value in permitting notification of the responding forces as to what is burning as well as where.

Voice alarm systems are used to announce box alarms as well as give details of still alarm or special response. In this event, voice is employed as the

*The tendency in fire alarm transmission is to depart from the old, large nerve-shattering gong. Some deparmtents are experimenting with chimes.

BAR-WAY HOSE COUPLINGS

NOW AVAILABLE FOR ONE INCH BOOSTER LINES AND HIGH PRESSURE FOG LINES.

THE HOSE COUPLING SPECIFIED AND DEMANDED BY FIRE DEPARTMENTS

Bar-Way announces it can now supply 1-inch couplings, **in addition to its regular ¾ inch.** No. 1500 is designed for 1 inch hose with O.D. of 1½ inch (plus or minus 1/32 inch) and No. 1916 for 1 inch with O.D. of 1 19/32 (plus or minus 1/32 inch). Fully tested (see specifications below); comes in cast finish, polished brass or chrome. Thread, 1⅜ x 8 only, at present.

NO OTHER HOSE COUPLING HAS EVER PROVIDED SUCH A COMBINATION OF ADVANTAGES

FULL FLOW . . . no suppression of flow in coupling

STREAMLINED . . . free from objectionable projections—nothing to catch

INTERNAL EXPANSION . . . no shrinkage of hose at coupling

ACCURATELY MACHINED . . . always the same—interchangeable

REMOUNTABLE . . . use over and over again

The Bar-Way coupling is the ONLY high pressure coupling for fog lines approved by Underwriter's Laboratories, Inc. It has been proven over a period of years in various types of high-pressure service with not one failure of the hose coupling. That's real protection and why more and more fire departments are insisting on Bar-Way hose couplings . . . why leading builders of fire apparatus are specifying and using Bar-Ways on original equipment . . . why leading hose manufacturers endorse and have standardized on Bar-Ways.

Call your hose manufacturer or write direct. Be sure when ordering to specify both I.D. and O.D. of hose, as well as kind of braid or wrapping.

BAR-WAY MANUFACTURING CO.
CANAL STREET STAMFORD, CONN.
West Coast Representative: **W. D. RIGDON, 383 Brannan St., San Francisco, Cal.**

secondary or auxiliary system, for confirmation of bell alarm. Where so used it usually takes the place of the secondary gong system.

Thus voice amplification permits both rapid, direct and detailed notification of fire or other emergency to the fire force by the communications headquarters. It permits response to a definite location. It forewarns firemen going out on special assignments, enabling them to be better prepared to meet conditions on the fire ground without delay (such as having special breathing equipment "at the ready"). It permits, if desired, two-way communications between firehouses and headquarters, independent of telephone or radio. It is a check on telegraphic signals and, finally, it is ideal for promulgating routine or special messages having to do with the administration and operation of the department.

Recording Devices

Of necessity, all fire departments make use of public telephone systems in receiving alarms of fire. Despite the telephone's drawbacks as an instrument for fire alarm transmission, the majority of fires in this country are reported over that medium. In many localities it is the sole reliance of the fire service for fire alarm communications. In addition, many fire departments depend upon the telephone for dispatching fire forces.

Even though trained in its use, firemen have been known to misunderstand telephone directions and orders. Fire alarm dispatchers, likewise, frequently have difficulty in understanding persons who try to telephone the alarm under stress of excitement. But, unless there is incontrovertible proof of just what the person said in telephoning the alarm, and what the dispatcher said in directing movements of fire units, there is no way to place the burden of responsibility for error.

Message recording is the answer in such situations. But the recorder has further use. It has value in helping run down and convict senders of telephone false alarms.

What is believed the first recorder installation was made at fire alarm headquarters, Washington, D. C., in 1938. Since that time such devices have been in continual use in that city with considerable satisfaction. In 1943, when the Emergency Ambulance Service was established, and dispatching of the District of Columbia's ambulances placed under the jurisdiction of the fire department's alarm bureau, an additional recording device was installed. Later these machines were replaced by a new type developed by Dictograph Corporation during the war. These are now in daily use.

In addition to recording telephone conversation, it is now possible to record radio and other forms of messages and to play them back at will.

Through this medium communications authorities are able to apprehend many persons sounding false alarms of fire. When they were confronted with their own conversation and peculiarities of speech, the culprits readily confess.

There are several types of mechanical recorders on the market, any of which may be applied to fire communications. Some utilize a magnetic wire tape or ribbon; some employ a disc and others a cylinder. All are based somewhat on the old phonograph principle.

Recordings may be made continuously through a bank or set of machines, or the recorders may be employed only when desired. In some communications headquarters the telephone or radio operator, or dispatcher, starts the machine by tripping a switch to record only such parts of a message as desired. In others, all telephone and other traffic may be preserved through 24-hour recording.

Sound recorders have found a wide application of use in training and education, and in the entertainment field. In a recent training school in Westchester County, the lectures given by leaders in the fire service were recorded on a wire recorder, Air King portable. The recording unit was hooked up to the speaker's microphone and the entire proceedings of the sessions were preserved on sensitized wire. The wire was retained in spools, each spool representing an hour's program. The messages may be played back on the machine at any time and if it is desired, the wire recordings may be wiped off and the wire used over and over again. Such a recorder sells retail at from $99.95 to $139.50, complete with microphone and attachments. It will pick up and preserve any sound within the range of its receiving unit, and its play-back can be amplified to almost any desired volume.

In 1947 FIRE ENGINEERING conducted a Round Table on the subject of recording fire department messages among several score fire chiefs and almost without exception it was agreed that recorders were an asset for helping clarify

NEW ALADDIN DEVELOPMENT SOLVES IN-LINE PROPORTIONING

ALADDIN IN-LINE PROPORTIONER RECOVERS 80% PRESSURE

New York, N. Y. The new model HY In-Line Proportioner, unveiled for the first time by the Aladdin Proportioning Equipment Co., Inc., has created immediate enthusiasm among fire-fighting engineers. Aladdin's new model is an In-line or hydrant proportioner which proportions 6% foam into hose lines and recovers the amazing pressure of 80% and higher when used with a 1% wetting agent.

The Model HY proportioner can be used directly off a hydrant; between two hose lengths; mounted on a truck; as part of a fixed industrial installation. Aladdin engineers also announced that the HY proportioner requires no pump to maintain pressure and operates in a 30 psi to 150 psi pressure range.

Initial response from Fire Fighting personnel throughout the nation indicates that the Model HY joins Aladdin's Model AA around-the-pump proportioner as another effective weapon in Fire Fighting. The new HY model comes in 1", 1½" and 2½" sizes. The engineers of Aladdin Proportioning Equipment Co., Inc., welcome inquiries and requests for further information.

ALADDIN PROPORTIONING EQUIPMENT CO., INC.

119 West 57th Street New York 19, N. Y.

garbled or otherwise indistinct fire alarms, reducing errors in transmitting certain types of alarms and dispatching emergency forces, and as an aid in securing convictions in false alarms. Many chiefs stressed the high percent of alarms received over the telephone, and the large number of people of foreign extraction in their areas who could not speak clear English. Many emphasized how this instrument would help them under such conditions.

As the use of radio increases in fire service communications, many chiefs and superintendents of communications believe that recorders will be indispensable for logging wireless messages as well as for recording the wire type.*

Teletype Proves Adaptable

Teletype was adopted by the police service as a communication medium over twenty years ago. In 1932 New York had its statewide teletype system and it wasn't long before practically every state was using it.

Successful use by police raised the question why shouldn't the fire service employ teletype? To the City of Cincinnati, Chief Barney J. Houston, goes the credit for the first complete, workable teletype installation among the nation's municipal fire departments. A number of other departments have since adopted teletype, among them Los Angeles and New Haven.

Cincinnati's teletype system was installed by the Graybar Company. It consisted of duplicate printer at headquarters and complete circuit layout and receiving machines at each of the fire stations and the chief's office at City Hall. Through the use of the system of teletype message transmitters, all still alarms, all box alarms and special calls for apparatus and equipment can be dispatched simultaneously to all fire stations. The messages are typed on a paper which is fed to the transmitting unit and electrically printed in duplicate, which permits the officer in charge to take one tape with him as he responds to the call. Routine fire department communications also are sent out via the teletype.

In New Haven the transmitting instrument is located at fire alarm headquarters, each fire station having a tape-type model receiver. Although this city has practically eliminated the old coded signal bell method of dispatching fire messages, the department still maintains its wire circuits intact, as an additional means of communication in the event of failure of the present equipment.

In New Haven the teletype is used to the fullest possible extent, both in fire

*One of the reasons for the delay in early adoption of recorders by the fire service was the refusal of the Federal Communications Commission to permit their use on telephone systems. Those restrictions have since been removed and recorders may be employed by any fire communications office. Recorders, however must be used subject to FCC regulations, among others that such use be accompanied by the use of an automatic tone warning device which will produce a signal that "will provide adequate notice to all parties to a recorded telephone conversation that the conversation is being recorded." It is reported that the use of this warning tone does not interfere in any way with the clear reception of messages. Of interest to those departments already employing recorders is the Commission's ruling that "local municipal calls (fire department) should be left free of any interference and no change over existing practices will be necessary. However, all interstate messages or foreign messages on toll telephones must have warning indications."

BE SAFE with a Scott Air-Pak

● Smoke is a gas . . . made visible by solid particles. In fire fighting the important question is "What type of gas is present in the smoke . . . and does sufficient oxygen remain to support life?" The Scott Air-Pak, used on arrival, permits immediate inspection and action without subjecting personnel to breathing hazards. No matter what type of gas is present, or if oxygen is deficient, Scott Air-Pak completely supplies its wearer with pure cool breathing air . . . in any volume "demanded" by him.

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ONLY THE SCOTT AIR-PAK HAS ALL 6 FEATURES

1. Can be used in any temperature; below zero to oven heat.
2. Only the Scott delivers fresh, cool confidence-inspiring air.
3. Only the Scott has a gauge to prevent the inadvertent use of empty or partly filled cylinders.
4. Only the Scott has acid and corrosion proof straps and fittings.
5. Only the Scott has a battle-tested emergency-proved regulator, and a mask permitting conversation.
6. Only the Scott has a gauge within the wearer's vision, custom-built, not a commercial gauge, to provide the maximum in utility and safety.

48 Air-Paks at Providence, R. I.

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Wire or Write for a Free Demonstration

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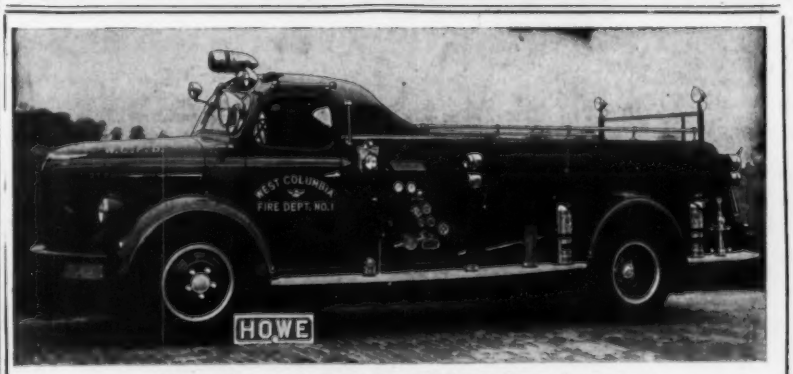
"THERE CAN BE NO COMPROMISE WITH QUALITY WHEN A LIFE IS AT STAKE"



HOWE Fire Truck Equipment to Meet Every Service

Established 1872

HOWE FIRE APPARATUS COMPANY, 1402 West 22nd Street, Anderson, Indiana

alarm transmission and for handling routine departmental business.

All messages are recorded on the teletype, whether companies are in or out of quarters. If out, the company checks the teletype for messages upon its return. Important material may be cut from the rest of the tape and filed.

The experience of Chief Paul P. Heinz of New Haven is essentially the same as that of all other fire officers who have installed teletype (and where they employ it to the full). They consider it indispensable.

With teletypewriter, there is no possibility of misunderstanding words or syllables. The message comes printed and can be retained. In New Haven, by its means, the house watch is eliminated after 12:00 midnight—a practice not universally followed in municipal fire departments. All routine business messages after 12:00 o'clock, such as hydrants out of order, streets blocked, and so on, are immediately promulgated via the teletype and become a permanent record available immediately to either the officer in charge or the house watchman. It is customary for the officer to check the teletype first thing in the morning.

Should an alarm of fire be received after midnight, the officer first refers to his teletype on "hitting the floor" to check any pertinent information that might relate to the operations of his company. For example, a still alarm received previous to the bell alarm would be so indicated on the tape record.

All information relating to a fire is sent out soon after the last company has returned from that fire. This covers the owner, occupant, type of building, address, etc. This makes unnecessary each company checking with headquarters by telephone (and tying up the phone board) for the information.

Use of the teletype keeps emergency telephone lines open for emergency calls. Previously, when a message was sent out to all companies, a signal "3-3" was sounded on the bell, which meant all companies would pick up telephone receivers and "listen in." The operator would then plug in a master jack connecting all phones into one circuit and repeat the oral message twice and request an OK from all companies. All this is eliminated by use of the teletype.

In addition, the teletype can be used at any time to transmit alarms of fire, should the main fire alarm system fail. Fire alarms are still sent out over the Gamewell transmitter, the teletype being used purely as a supplemental follow-up, and for routine fire department business.

There are in general use today two types of teletype, the tape, and the page model. The tape model is in more predominate use. In this the message is received on a moving tape, whereas on the page model the message is received on a sheet or page. Both mechanisms, however, are essentially the same.

Teletype machines can be purchased outright or leased. In New Haven, the department owns its own system. Other departments lease their teletypes, together with the maintenance and repair service. Costs are based on several factors, such as number and lengths of circuits, number of units, maintenance service and so on. The line charge is understood to run around $2 per mile, with machine charges of from $15 to $25 per month. On the lease basis no capital investment is required and all service is handled by the telephone company.

In operation the messages are typed on the headquarter's unit and delivered automatically at a speed of 60 words a minute to as many receiving units as may be desired. Units are powered by a small motor, either AC or DC with an input of about 65 watts.

Service is an important factor in the successful use of the teletype. Little training is necessary for receiving messages but the sender must know the operation of the typewriter keyboard.

Among the various uses of the teletype are:

Transmission of orders of the day, including personnel changes, appointments, promotions, reliefs, deaths, vacations, leaves of absence, flying the colors, etc.

Special orders, covering details and assignments, re-calls, accidents, fill-ins, transfers, etc.

Fire reports, operations of companies and battalion and other districts; operations details involving personnel.

Reports of events and developments affecting the department, and individual companies; hydrants, standpipes and sprinkler systems out of order; blocked streets; repairs to buildings, etc.

Fire prevention activities; inspections; reports of violations and convictions (the teletype can to a certain extent be used as the department's "newspaper.")

Augmenting the department's fire alarm system, as an auxiliary and reserve.

Cooperation with other municipal de-

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SIREN—Siren shall be of type A-2 H.O.R. or equal mechanical siren driven by separate pulley from fan shaft, or equal drive, and equipped with approved foot control.

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Mounted directly on motor block in a rigid position, they instantly respond to full blast in a fraction of a second.

H. O. R. SIREN CO.
40 BROADWAY
NEW BRIGHTON
STATEN ISLAND, N. Y.

partments—police, water and sanitation, etc. Instructions and information on training; and special events and celebrations; parades and other functions involving the department.

Facsimile Little Known

A newcomer to the communications field is facsimile. Although practically unknown to the fire service, it is in fairly wide use by police.

Facsimile means a machine attached to a wire or radio receiver which makes a duplicate copy of the message or picture in a machine at the other end of the wire or at the radio transmitter. It is a method of communication whereby written, printed or illustrated messages can be delivered, on paper, with the speed of electricity and with perfect security, between any two places which can be connected with an electrical circuit.

By means of facsimile it is possible to flash written orders, sketches, identification data, fingerprints and other information over existing police and fire radio, teletype or other wire circuits, without fear of interception by outsiders. An exact duplicate of the original order or information is received and can be kept for file. The recorder at the receiving end operates automatically and need not be attended.

At present, the greatest field for facsimile in fire service communications is in mutual aid and forestry fire control. Emergencies such as fire, flood, hurricane, bridge washout, wreck and other accidents can be put on the wire and both the picture and written story dispatched in a matter of seconds to as many different locations as desirable. Diagrams, charts of roads and various other pictorial information can be sent more rapidly by facsimile than by any other form, it is said.

Facsimile operates with existing communications facilities. A mobile unit can be used with present radiophone transmitter and receiver. Oral orders can be received while the facsimile unit stands by, starting automatically for its messages as they come over the same radio system—and with the advent of FM (frequency modulation) and multiplexing, both oral and facsimile messages can be received simultaneously.

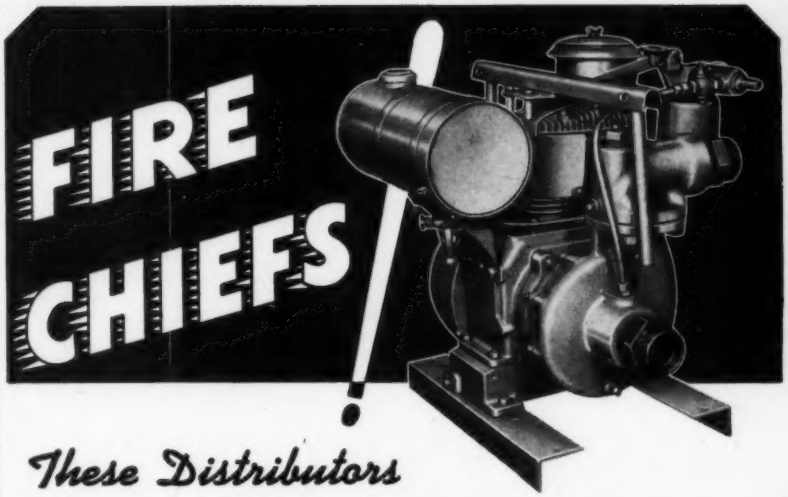
The cost of the equipment is reported well within the range of even small fire departments.

Automatic and Central Station Protective Systems

At the beginning of this study we said that little can be done to shorten the time between the start of a fire and response of fire forces until automatic fire detection and alarm transmission systems are more widely used. Many fire chiefs agree with this belief, in fact, some are already contemplating the installation of such systems in every serious fire hazard in their cities.

Proprietary, auxiliary and local alarm systems, including those embracing the important feature of automatic fire detection and announcement, and automatic extinguishment are available in almost every American city.

Proprietary fire alarm systems, designed for the larger industrials and institutions, are under exclusive control of the owners and the supervision of competent and experienced operators. In



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THAT RELAYS WATER TO THE PUMPER AND FIGHTS FIRES DIRECT

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NEW COLLAPSI-COT
EMERGENCY STRETCHER-TRANSFER CHAIR

America's finest all-purpose stretcher. Telescopic construction permits it to be adjusted to all types of emergency carrying. Use it as a flat stretcher, transfer chair, cardiac carrier, etc. Sets up in 10 seconds. Weighs only 23 lbs. Back rest adjustable to any angle. Size collapsed 20" x 48"; open 20" x 75".

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these systems fire alarms can be initiated manually or automatically at a multiplicity of points within a protected property and announced audibly and visually at a headquarters supervisory station located on the property. Maximum protection calls for automatically and simultaneously transmitting these alarms to the city fire department via the circuits of the municipally owned fire alarm system, if available.

Auxiliary fire alarm systems consist of alarm initiating devices, manually operative auxiliary fire alarm boxes, automatic fire detectors, supervisory contacts on sprinkler systems, associated with one or more master fire alarm boxes directly connected in a city fire alarm circuit and alarms initiated within a protected property which are simultaneously announced at the municipal fire department.

The local alarm feature which may consist of gongs, vibrating bells, horns, sirens, or combinations of such devices, may be associated with the auxiliary fire alarm system. Protection afforded by a complete local alarm system is essential for buildings involving life hazards.

There are today available dependable and efficient fire detectors of both the fixed temperature and rate-of-rise types that may be included in and, if desired, form the basic element of the proprietary, auxiliary, and local alarm systems. Automatic fire detection systems are especially effective for public buildings, structures containing costly records, hospitals, schools and hotels and high hazard industrial occupancies.

Since the war, sprinkler supervisory and waterflow alarm service has been installed on a large scale throughout the country. This type or system is usually subscribed to and is maintained by a central station supervisory service. An important element of this type of protection is the reliability and dependability of the service rendered by the central station, and its coordination with the public fire department.

This same central station may provide watch service, including special alarm boxes for watchmen's use, and other features. Alarms on this type system are received by the central station and retransmitted to fire headquarters. A night watch service also is available in which the supervision of the watchman is afforded by a combination of mechanical and electrical devices, including fire alarm boxes.

A late scientific development in the field of automatic detection is the invisible ray, or photoelectric protection. By this means an invisible light beam, when interrupted by smoke or a person or other object, transmits an immediate alarm. Photoelectric protection has wide application, including public utility plants, docks, prisons, government buildings, arsenals, and so on.

Still another form of electric protection which is becoming increasingly important is that of supervising air circulating ducts of air conditioning or forced draft ventilating systems in such a way that smoke or unusually hot air which might pass through them is promptly detected, permitting instant and automatic stopping of the circulating air and eliminating the possibility of the spread of smoke or fire within a building.

Finally, there are a number of detection systems, operating on the rate of temperature rise principle which are self-contained and emit audible and/or visual signals when a predetermined rate of rise of temperature is reached. There are also on the market various alerting systems consisting of gong or other noise-maker, operated on the electrical or thermostatic principle.

Conclusion

Reviewing the entire field of communications, even as only sketchily covered in this report, the fire protection engineer and fire officer must be convinced that science has indeed prepared for him and his constituents vast improvements in communications facilities. The degree and extent to which he employs them cannot help but be reflected in the nation's fire waste.

Firemen Cool Chickens

Anyone who thinks that a chicken necessarily must lead an uneventful life is, pardon the expression, a cluck.

Some 12,000 poultry on the Wells and Son farm at New Milford, Conn., who have recovered their composure after a grilling experience of passing through ordeal by fire and water, know differently.

They will testify that only prompt action by the members of New Milford's Water Witch Hose Company, saved them from being so many roasted chickens when the rays of a sun during the recent heat

CARPENTER-LIGHTS

For the protection of life and property it is imporant that you carefully check *all* your replacement needs. Don't overlook the special value of portable hand searchlights. "It's the first two minutes that count." Portable lights are instantly ready at every fire — no waiting for floodlights to be set up. And remember that the extra Quality and extra dependable Performance of Carpenter-Lights have made them preferred standard equipment. And extra long wear make them easy on the budget.

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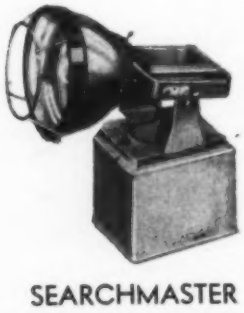
Clears your side of the way as well as warns those approaching. Combination flashing, oscillating WIG-WAG Redhead. Beam range 1,000 feet ahead, visible for miles. Safer, faster, quieter runs. 6" and 8" diameter sizes.

PORTALITE

The finest dry battery light made. Mile range. Gives powerful searchlight beam for 8 to 10 continuous hours. Only 9 lbs. (Also available with rechargeable battery.)



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Just pick up your Searchmaster. All the light you want at the snap of your thumb. Patented handle points anywhere *without cocking* arm. Rechargeable.

Write for Catalog and Prices of Complete Line
— or Order through Fire Equipment Houses.

"There's a Carpenter-Light for Every Emergency".

CARPENTER MFG. CO.

200 MASTER-LIGHT BLDG.

BOSTON—45—SOMERVILLE, MASS.

"Master-Light Makers for 34 Years"

wave that swept New England, made ovens of their domiciles.

George Wells, owner of the farm, became alarmed on August 30 when his birds gasped for breath in a temperature of 110 inside their coops and began to topple over.

"Chickens breathe exclusively through their beaks—they can't get air through their feather coats," he said. "In that heat, they were suffocating."

Realizing the need for emergency action, he called the Water Witch volunteers who sprayed the houses inside and outside, quickly reducing the temperature. They sprayed the chickens, too, pumping the water from the East Aspetuck River near by.

Mr. Wells, who has a branch of his farm in New Preston, where 18,000 chickens are housed, lost many of them on Aug. 30. The following day, on the basis of his experience at New Milford, he called the Washington, Conn., volunteers, which turned the hose on the sizzling coops, putting a stop to the fatalities.

TOM MAGNER.

Short Cuts and Gadgets

(*Continued from page* 708)

do is to arrange to pick them up, and the road will gladly give them to you. Then you've got the finest sort of makings for a hot fire on which you can demonstrate all kinds of extinguishing agents and equipment."

That was what happened in Westchester County; maybe there's an idea in it for our readers elsewhere whose department is ferninst a railroad.

* * *

FOR RURAL PROTECTION

E. R. Jenny of Fort Myers, Fla., suggests fire department connections in wells in rural areas. He writes: "If all rural fire departments would have people who live in the rural districts install standard fire department 2½-in. connections for their pumpers to get much needed water this would be helpful in fighting fires involving property outside the reach of the city's hydrants. I would suggest the farmers or others making this connection have holes drilled in their well casings and then weld in a standard 2½-in. connection. I have seen this tried out and it works to good advantage."

The editors do not wish to discount Brothers Jenny's idea but would like to point out that, as he describes it, such a connection would only be good under certain conditions. First, the connection would have to be made on the casing *below* the pump piston in the well; Second, the pump piston would have to be airtight or a valve provided for closing line below pump piston; Third, the surface of the water would have to be not more than twenty-five feet below the pump on the apparatus in order to get any water; Fourth, the water in-flow to the well must be comparatively large.

Fire Threatens Truman Cavalcade

A tense moment of the fireworks celebration given President Truman during his political visit to Jersey City, N. J. on the night of Oct. 7, came when sparks from one of the six different dis-

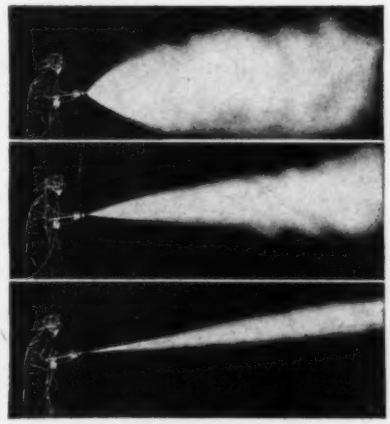
America's Most Complete Line of Fire Protection Equipment

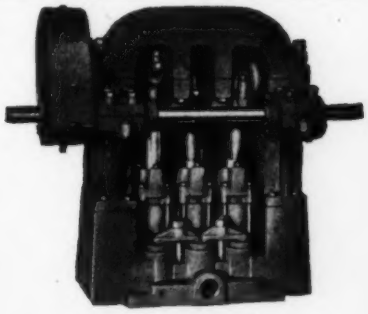
AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO

and Subsidiary

FOG NOZZLE INTERNATIONAL, INC.
LOS ANGELES, CALIF.

The Pump Determines The Efficiency of The Fog Fire Truck





● Write for specifications and other data about Hardie High Pressure pumps and Fog Guns, standard equipment in Fog Units by leading fire equipment manufacturers. Learn why so many firemen specify Hardie pumps when buying Fog Fire Trucks.

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See Your Morning Pride Dealer or Write

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YOU'RE SAFER WHEN YOU CAN SEE MORE.....

With the ACME Full-Vision FD GAS MASK

No other gas mask gives you the full vision provided by the Acme fire-fighters' gas mask. It's safer, too, because of its exclusive dead air check valve. Acme FD canisters protect against smokes, fumes, dusts, mists and gases. Write for new bulletin.

ACME PROTECTION EQUIPMENT COMPANY

3037 W. Lake St. • Chicago 12, Ill.

plays set fire to paper decorations on an automobile carrying Mrs. Truman and Representative Mary T. Norton.

Secret service officers tore the decorations from the car and hurled them to the ground while Mrs. Truman and Miss Norton beat at the embers that were smoldering on their clothes.

News of the Manufacturers

(*Continued from page 707*)

tus that can provide 1500 gallons of water and the necessary self-contained pumps to deliver it through desired lengths and sizes of fire hose will be much larger than the number that can be extinguished with the normal and smaller booster tanks. And in support of his belief, Mr. Spangler and his associates, have introduced a large water carrier with pump.

Its turning radius is 40 degrees, and is accomplished by a unique synchronized steering arrangement of the two forward axles and their eight wheels. Its great weight is evenly distributed on its chassis and axles.

The Spangler unit is named "dual" because, in design and construction the dual theme is carried throughout. Besides the dual tires, the unit is dual powered: twin Ford V8 100 h.p. engines. It is dual geared, power being applied to both the two rear axles. It is dual steered, in that two speed steering is provided for greater safety. And it has dual fire fighting power: twin 500 GPM front-mount single stage centrifugal pumps (they can be used in tandem or individually). Each pump can supply both or either of the tandem booster hose reels, mounted atop the apparatus. There are four reels, each bearing 150-ft. or a total of 600-ft. of leader line, so coupled that they can be used together or singly.

In addition to performing the functions of a husky water reservoir, the Spangler Dual carries a very large load of hose and equipment. Total capacity of 2½-in. standard fire hose is 5,000 feet, or equivalent in smaller hose. Room (compartmentized) is provided for conventional ladders, and other fire fighting, and rescue equipment.

An interesting feature of design and construction is the fact that throughout, regulation standard Ford parts are used. Thus the unit may be serviced at the nearest Ford service station.

Carryable Generators

Homelite Corporation has just issued a new 12-page bulletin describing their complete line of carryable gasoline-engine-driven generators.

This new bulletin shows, in words and pictures, the many uses for carryable electric power. A check list of qualities to look for in a generator is included in the bulletin, to guide you in selecting a unit to meet all of your requirements. Complete structural details of the Homelite generators are described and illustrated with cutaway photographs. The complete line of Homelite generators includes units from 500 to 5000 watts, weighing from 57 to 178 pounds. There are six major groups of units: 115-volt AC generators for general power services; 120-volt DC generators for Universal electric tools and floodlights; 115 or 230-volt AC dual-voltage generators for services requiring both voltages; dual-purpose

WENTWORTH HEAD-MASTER
REG. U.S. PAT. OFF.
FIREMAN UNIFORM CAPS

Union Made Prompt Delivery

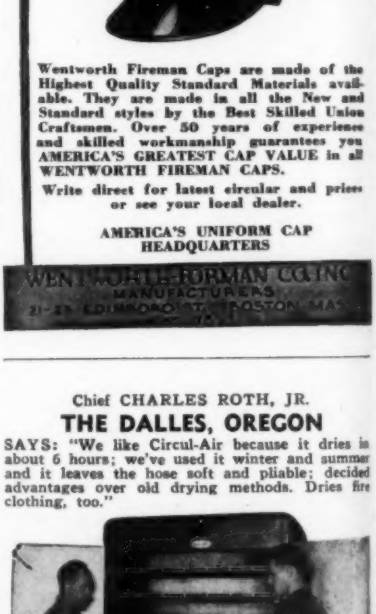
Wentworth Fireman Caps are made of the Highest Quality Standard Materials available. They are made in all the New and Standard styles by the Best Skilled Union Craftsmen. Over 50 years of experience and skilled workmanship guarantees you AMERICA'S GREATEST CAP VALUE in all WENTWORTH FIREMAN CAPS.

Write direct for latest circular and prices or see your local dealer.

AMERICA'S UNIFORM CAP HEADQUARTERS

WENTWORTH FIREMAN CO. INC.
MANUFACTURERS
21-23 EDINBORO ST. BOSTON, MASS.

Chief CHARLES ROTH, JR.
THE DALLES, OREGON
SAYS: "We like Circul-Air because it dries in about 6 hours; we've used it winter and summer and it leaves the hose soft and pliable; decided advantages over old drying methods. Dries fire clothing, too."



CIRCUL-AIR

FIRE HOSE DRYER

Makes good hose last longer, prevents mildew and rot. Keeps all hose in service, saves time, man-hours, and valuable space.

WRITE FOR FREE CATALOG

THE CIRCUL-AIR CORPORATION

575 East Milwaukee St.
DETROIT 2 MICHIGAN

high-cycle generators for the new high-cycle electric tools and standard Universal electric tools; 6 to 160-volt DC generators for battery charging; and special gasoline-engine-driven and electric motor-driven generators designed for specific applications. Ask for Bulletin L-408, to Homelite Corporation, 2408 Riverdale Avenue, Port Chester, New York.

Fog Nozzle Advances Prout

Fog Nozzle International, Inc. of Los Angeles has advanced E. W. Prout from Plant Superintendent to Manager in Charge of Operations.

E. W. Prout

Mr. Prout, who has been with the organization since 1937, succeeds W. J. Lundell who is now Vice President and General Manager of the Akron Brass Manufacturing Company of which Fog Nozzle International is a subsidiary.

For Quick Engine Starting

A new electric pre-heater for keeping the engines of fire apparatus warm regardless of weather, has just been placed on the market by Kim Hotstart Mfg. Co., West 917 Broadway, Spokane 11, Wash.

The unit, an electrical one, is mounted on the side of the engine and draws cold water from the engine, heats it, and forces hot water back into the engine block.

It insures quick, easy starting, no matter how cold the weather is.

The device is attached to the electrical circuits of the station by a simple plug-in to electrical outlet.

While the Kim Hotstart is designed particularly for use in cold, or cool weather, its installation is helpful at all times, particularly on engines and vehicles being used on short runs or start and stop work.

The manufacturer points out that the use of this heating unit reduces motor wear and depreciation, prolongs battery life, cuts cost of terminal heating, and insures quick get-away at all times.

Foam for Alcohol Fires

A foam-type recharge, produced for hand extinguishers suitable for fighting alcohol and other polar organic fires, and which may be used in any 2½ gallon foam extinguisher, has been developed in the research laboratories of National Foam System, Inc., Philadelphia, and is now being marketed.

The Company, which specializes in foam fire protection systems, developed this new foam-type recharge particularly for the chemical, paint and varnish

CHANGES IN STREAMS HAVE TO BE MADE
MAKE 'EM QUICK AND EASY

USE THE
PEERLESS
HOSE CLAMP
AND
LESS MEN

THE
"CHASING METHOD"
IS OBSOLETE

HUNDREDS OF FIRE CHIEFS CAN'T BE WRONG

Since 1910 the PEERLESS HOSE CLAMP has been the leader in the hose clamp field
Improved like your apparatus but never excelled

OUR SLOGAN ALL THESE YEARS HAS BEEN:
"If you can find a better clamp than the PEERLESS buy it"
But beware of cheap imitations and substitutes made to sell
DEMAND THE GENUINE AND GET THE BEST

WE ARE SUPPLYING ALL MANUFACTURERS OF APPARATUS WITH THE PEERLESS

DON'T NEGLECT TO
SPECIFY THE NEW PEERLESS ON NEW MOTORS

EQUIP EVERY PUMPER IN SERVICE
Patented and Manufactured by
KELLAM MANUFACTURING CO., P. O. BOX 729, ATLANTA, GA.

"CENTRAL" HAS A RECORD
FOR DEPENDABILITY

Central Triple Combination 500-Gallon Fire Equipment, Mounted on Commercial Chassis

FROM THE SMALLEST TRUCK TO THE LARGEST CUSTOM BUILT PUMPER—CENTRAL DESIGN AND CONSTRUCTION LEADS THE FIRE APPARATUS FIELD

CENTRAL FIRE TRUCK CORPORATION
4437 MANCHESTER ST. LOUIS 10, MO.
Write for our new 62-page catalogue

The Voice amplified 2500 TIMES!

Audio Portable Electric Megaphones deliver orders crisply and clearly because they amplify the voice 2500 times!

Audio Megaphones are ready for every emergency. They're light in weight; equipped with internal storage battery and charger — and can be taken anywhere — in any weather without detriment to any part.

Write for detailed information.

AUDIO EQUIPMENT CO., INC.
80-20 — 45th AVE., ELMHURST, N. Y.
Territories open for qualified agents.

Order Now!

FIRE HOSE

New B. F. Goodrich— This specially designed booster hose takes 800 lbs. pressure. New high pressure couplings — stronger construction — will not flatten or shorten under pressure — will outwear any booster hose made. Lighter, more flexible, ideal for new type fog nozzles, convenient 50 ft. lengths.

Fyr Fyter Best— The latest and best in modern fire hose — embodies 60 years of special experience in materials and manufacture. Average burst strength 900 lbs.

Fyr Fyter Chief— The dependable high-quality fire hose for municipal service. Average burst strength 700 lbs.

Fyr Fyter Captain— A substantial high quality fire hose, average burst strength 650 lbs.

Fyr Fyter hose can be supplied specially treated for extra anti-mildew and moisture resistance.

Ask for free Catalog 43, our 96-page book of Facts on New Fyr Fyter equipment.

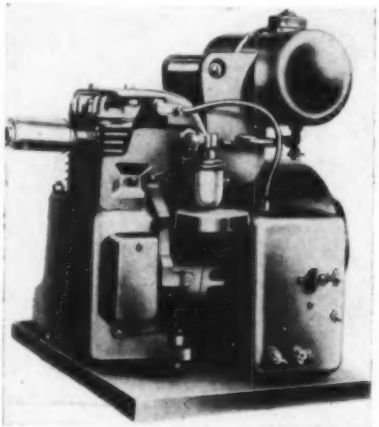
FYR-FYTER PRODUCTS
19 Beekman St. New York

and distilling industries and others in which alcohol, ether, acetone and other polar organic solvents are used. Because ordinary foam is not stable in such solvents, National Foam developed this new foam recharge, which is also effective in extinguishing petroleum product fires.

The new product is being marketed as National "99."

New 77-Pound Electric Plant

Said to be the smallest and lightest four-cycle, engine driven, A. C. lighting plant ever developed, the new Onan Model AAE generates 350 watts alternating current, and is small enough (less than 2 cubic feet) to fit into the trunk compartment of an automobile. It weighs only 77 pounds.



New Model AAE Onan Lighting Plant

The unit is adaptable for sound recording work, portable P. A. systems, small fire rigs, emergency lighting kits.

Developed by D. W. Onan & Sons, Inc., Minneapolis, Minn., this new series of AAE plants is available in both 115-volt Alternating Current models and in 6, 12 and 32-volt D. C. battery chargers. Model 03AAE develops 350-watt, 115-volt A. C. while the battery charging models are available in 300 and 400 Watt capacities. All models have electric push-switch starting.

It may be hooked up to any automobile battery for starting. While the plant is running a special 6-volt winding in the generator charges the starting battery.

Simple controls on the battery charging models make it easy to regulate the charge rate by means of a manual throttle and ammeter. Ratings for the battery chargers are as follows: Charger for 6-volt battery—40 Amperes at 7 volts D. C.; charger for 12-volt battery—28.5 Amperes at 14 volts D. C.; charger for 32-volt battery—11.0 Amperes at 36 volts D. C.

Braxmar in New Location

C. G. Braxmar Co., well-known maker of badges for nearly seventy years, has moved to newer and larger quarters at 216 East 45th St., New York City.

The company had been at its old location, 242 West 55th St., for nearly twenty-five years, and made the move now because of expanding business. The new plant is not only considerably larger in size but is equipped with bet-

FIREMEN'S UNIFORMS

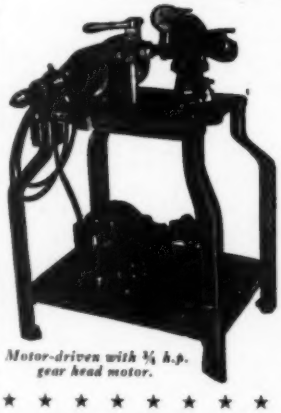
BADGES
CAPS
INSIGNIA

Manufacturers of uniforms for over 50 years

Official Makers of Uniforms for New York City Fire Dept. and Serving Other Departments From Coast to Coast.

RUSSELL UNIFORM CO.
1600 Broadway, New York 19, N. Y.
Write for Fire Dept. catalog No. G-57

FOR THE PROPER CARE OF YOUR FIRE HOSE
DAYTON POWERDRAULIC EXPANDER



Motor-driven with ¾ h.p. gear head motor.

★ Expands couplings from ¾" to 6" size.

Tests hose up to 700 lbs.

Extra attachment removes old expansion rings from old couplings. No manual effort needed.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

MORE PRESSURE - LARGER MOTOR
ROOMIER WORK TABLE
REPLACEMENT SEGMENTS (ALL SIZES)
FOR ANY OLD HYDRAULIC EXPANDER

SEND FOR ILLUSTRATED BULLETIN

DAYTON FIRE EQUIPMENT CO.
1242-48 W. 2ND ST. - DAYTON 7, OHIO

ter and more up-to-date manufacturing facilities.

An invitation to visit the plant is extended by John O. Veit, President of the company.

Persons in the News

N. D. Mitchell to Head Fire Protection Section, N.B.S.

Nolan D. Mitchell, prominent in architectural and engineering fields, has been appointed Chief of the Fire Protection Section of the National Bureau of Standards, where he will direct further research for the Building Technology Division on problems of fire-resistance in relation to the design and construction of buildings and building materials.

N. D. Mitchell

Mr. Mitchell has been on the staff of the National Bureau of Standards since 1922 and has made a number of important contributions in the fire protection field, an outstanding example of which is his investigation of the control of airplane hanger fires by the automatic application of water. His research on the fire-resistant properties of structural materials, such as metal-framed and wood-framed interior partitions and columns protected by gypsum, has led to the determination of the effects of fire and the time in which a wall, floor, or other structural element will retard the spread of fire; improved methods of temperature measurements; and the standardization of fire tests.

Mr. Mitchell has also conducted extensive investigations of automatic fire detecting and extinguishing devices.

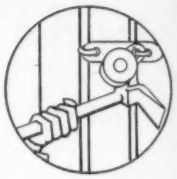
Mr. Mitchell received the degrees of Bachelor of Civil Engineering from the University of Arkansas in 1908 and Bachelor of Science in Architectural Engineering from the University of Illinois in 1910. He is a registered architect and held several positions in the engineering and architectural professions before entering Government service. Previous to his appointment to the National Bureau of Standards, Mr. Mitchell was Assistant Chief of the Structural Division, Office of the Supervising Architect, Treasury Department, now Public Buildings Administration of the Federal Works Agency.

10 TOOLS IN ONE!

Pat. Pending

"The Perfect Tool For Fire Service"

THE HALLIGAN TOOL



Here is a forcible entry tool that takes the place of ten ordinary fire tools, yet weighs only 8½ lbs. Can be used on doors, locks, floors, base boards, trim, molding, window frames, walls, roofs, hotspots, in fact has so many uses that they cannot be enumerated. Its light weight prevents fatigue and enables a fireman to use his full strength.

Typical Testimonials From Men Who Know!

Chief Paul P. Heinz, New Haven, Conn.
"We are pleased with this new appliance. The best tool in the Fire Service."

Chief Charles A. McGinley, East Orange, N. J.
"A tool that every Fire Department needs in its everyday work."

Made from one piece forged steel.

HALLIGAN TOOL COMPANY
1505 METROPOLITAN AVENUE, NEW YORK 62, N. Y.

WITH AN EASY-TO-USE GE TUNGAR* CHARGER

Your fire trucks will always be ready for quick-action starts if you have an efficient Tungar charger handy. It's a heavy-duty rectifier that can charge one 6-volt battery at 6 amperes, two 6-volt batteries at 3 amperes, or a 12-volt battery at 3 amperes. Just attach clips to battery terminals, and give the battery a boost right in the truck.

We'll gladly send more details. Just write to Section A95-1035, General Electric Company, Bridgeport 2, Connecticut.

**Trade-mark Reg. U.S. Pat Off.*

GENERAL ELECTRIC

EMBLEMS
THAT STAND OUT
BRILLIANTLY

Your Town Name

Thru REFLEXITE, a new optical plastic manufactured from Lucite, these emblems provide new safety to fire apparatus and all personal cars answering fire alarms. Thousands of minute optical lenses act as brilliant reflectors. Reflexite permanently bonded to Stainless Steel holder—in four colors including silver and fire department red. Will stand up under all kinds of weather. No vehicle answering a fire call should be without one.

Emblem is 5" high
Adjustable arm permits mounting at any angle
Emblem adapter for fastening direct to deck lid $.35 each any quantity

$2 ea. IN LOTS OF SIX

ORDER BY MAIL

CLEM MARSH
MUNICIPAL EQUIPMENT CO.
SCRANTON 3, PA.

AGAINST
POWER FAILURE!

FAIRBANKS-MORSE
GENERATING PLANTS

When so much depends upon continuous power and light service, why chance failure? Install a Fairbanks-Morse generating plant! These performance-proved units will provide dependable service even under maximum power demand over a long period. A.C. and D.C. types; remote and automatic starting. Capacities from 350 to 35,000 watts. Send today for folder ADB-400. Fairbanks, Morse & Co., Chicago 5, Illinois.

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A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • STOKERS • SCALES • MOTORS • GENERATORS
PUMPS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

Ahern Heads ASEE Committee

Prof. John J. Ahern, director of the department of fire protection and safety engineering at Illinois Institute of Technology, has been appointed chairman of the American Society for Engineering Education committee on industrial hygiene, safety, and fire prevention for 1948-49, it is announced by C. J. Freund, president of the ASEE.

Ahern heads the only four-year, degree-granting fire protection and safety engineering college department in the nation. He is known widely as an expert on the cause and prevention of fires.

A. G. Adams Dead

Special Agent Albert G. Adams of the Arson Department of the National Board of Fire Underwriters died suddenly on Sept. 10, following a a heart attack, at Cornwallville, N. Y., where he had been spending a vacation.

Mr. Adams, who would have been 67 years of age on Sept. 23, had served the National Board for nearly 19 years.

Before entering the employ of the National Board, he served for nearly ten years as a special agent of the Federal Bureau of Investigation, where he made an enviable record.

He was a member of the Society of Former Special Agents of the Federal Bureau of Investigation.

Dr. Bachelle Dies

Dr. Cecil V. Bachelle, 72, staff gynecologist at Henrotin Hospital, Chicago, Ill., died of a heart attack on Sept. 21. He was well known to the fire service of his neighborhood and to readers of this journal of years back for his editorial contributions.

The doctor was at one time President of the Delavan Lake Fire Association, a group of several volunteer fire departments and he maintained an active interest in the fire service until his death. He is said to have introduced the use of small boats for fire fighting at lake summer resorts.

New York State Firemen Elect

Arthur M. Hefner of Rochester, N. Y., was elected president of the New York State Firemen's Association at the annual convention held in Rome, N. Y. He succeeds Roswell D. Miller of Roslyn Heights, L. I. Chief Irving Wallach of Pelham was advanced from second to first vice-president and William G. Buckley of Queens Village was named a member of the executive committee for five years.

Following his retirement, Roswell Miller was feted by the fire service organizations of Long Island at a dinner in Garden City in honor of his two year term as head of the 76-year old organization.

Insurance Record Pay-off on Texas City Firm

In what is described as the largest single insurance payment in history, the Monsanto Chemical Company will receive $17,312,000 for the losses it suffered in the Texas City disaster of April 16, 1947, it was disclosed last month. The company had originally claimed $21,542,999.

BISHINGER-KOEHLER
INHALATORS

have been in use 25 years.

Approved by the American Gas Association and accepted by the Council on Physical Therapy of the American Medical Association.

Send for literature.

BISHINGER-KOEHLER
MANUFACTURING CO.,
Inc.

7840 Kelly Street, Pittsburgh 21, Pa.

for fast action!

When the difference between life and death, minor loss and complete destruction hangs on how quickly a fire hose can be handled, experienced fire fighters rely on *Hewitt Fire Hose.*

They've been doing so for more than three-quarters of a century. That's because its scientifically controlled construction assures lightness and flexibility. More, it assures high burst-resistance and extra durability.

Find out how *Hewitt Fire Hose* can help you. Write for details.

HEWITT RUBBER DIVISION

HEWITT FIRE HOSE

HEWITT-ROBINS
INCORPORATED
240 KENSINGTON AVE.
BUFFALO 5, NEW YORK

I.A.F.C. Celebrates Diamond Anniversary

Seventy-five years ago a small group of fifty fire chiefs met in Baltimore and formed the National Association of Fire Engineers. Doubtless even the most forward thinking of these chiefs had little idea of just how far their brain child was to go and what a big family of fire officers would develop from their decision. Nor could the most visionary of them have any conception of the extent and degree to which the fire service itself, as they knew it, was to expand before their organization was to celebrate its three-quarter century mark.

The proceedings of the organization, beginning with that of the May 1873 convention in Baltimore, reveal the extent of that progress.

From the day in that first organization meeting, when Chief John S. Damrell, president, read off the organization committee's report, with its clean cut recommendations and objectives, to the present the story has been one of purposeful progress. Within a few years the membership reached a hundred, then continued to climb. The Convention in Montreal in 1894—first to be held in the Dominion of Canada—signalized what was reported a new era in the history of the body. At this time its name was changed to International Association of Fire Engineers and membership was swelled by a larger number of Canadian chiefs.

Along about 1894 and 1895 new blood infused the organization, with Chiefs like Quigley of Syracuse, Devine of Salt Lake City and Roulette of Augusta, Ga., who made their influence felt. During those years precedent was being shattered and the constitution and by-laws were undergoing important changes.

With the election of Chief Quigley as president in 1899, further improvement was made. Chief W. R. Joiner, afterwards state fire marshal of Georgia, held the distinction of having been elected for three terms, once in 1887, presiding at the Minneapolis convention in 1888, and consecutively in 1903 and 1904.

World War I broke the sequence of conventions in 1917, the annual meeting of that year being dispensed with. The meeting of 1918, although held in the shadow of the war, was a successful one.

The 47th convention in Kansas City, with Chief John Kenlon of New York as president, marked the adoption by the Association of standards in fire fighting practice and the formation of a number of committees, each having a definite phase of this standardization work.

So it went, each year—with the exception of 1942 and 1945 when the second World War forced interruptions of consecutive conferences, the Association has convened and out of each session has come a better conception of the principles, procedures and products of fire protection and fire prevention. Each year the organization grew in its stature, and in strength. Each year its deliberations assumed more importance, more weight, as its member speakers, submitted their analysis of past, present and future conditions and problems of the fire service.

In 1926 the name of the organization was changed to International Association of Fire Chiefs. Later, the membership

LIGHT TO SEE TO WARN

IN ONE PORTABLE UNIT

MODEL A-25-FE UTILITY LIGHT

A powerful sealed beam flood. A strong flashing red beacon. The Model A-25-FE unit operates both from its own dry cell and from an extension cord to the truck.

For the first time, a portable battery light is available that really gives enough light where you need it. Use it to light areas and interiors and scenes of accident as well as to adjust apparatus. The flashing red light can save the lives of your men by warning traffic and indicating danger areas at fires. Convenient, reliable—a necessity. Order one today.

Do you know about our
G. E. Sealed Beam Warning Lights
Long Life "Fire Service" Flashers
Naval Type Apparatus Lights
If not, drop us a line.

Agents and distributors wanted.

ENGINEERED LIGHTING FOR FIRE FIGHTING

JULIAN A. McDERMOTT CORPORATION

40-22 NATIONAL STREET, CORONA, L. I., N. Y.

ATMO ALERTS PREMISES AND NOTIFIES FIRE DEPARTMENT 5 SECONDS AFTER START OF FIRE!

ATMO is the famous low-cost automatic fire alarm system that operated so effectively at the International Association of Fire Chiefs Field Day at New Haven, Connecticut, on May 22, 1948.

Within a period of 5 seconds after the fire was started, ATMO alerted the premises by means of a blinker light and directional siren, at the same time transmitting the alarm directly to the New Haven Fire Department Headquarters by means of the municipal circuit. Within 56 seconds from the start of the fire, the first apparatus arrived and went into action on the fire.

The same results can be obtained in your town. Reduce the fire losses in your community by having ATMO installed in your most hazardous occupancies. Ask for a free survey by our engineering department.

The ATMO System is approved by

Underwriters' Laboratories, Inc.

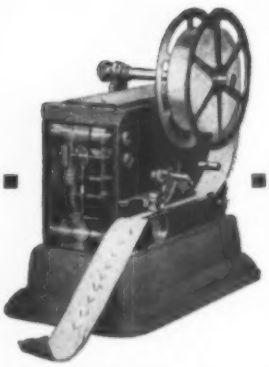
Factory Mutual Laboratories, Board of Standards and Appeals, City of New York

ATMO ACTS in SECONDS to STOP FIRE

J. H. SCHARFF, Inc.

40 MAIN STREET, ORANGE, NEW JERSEY

ORANGE 5-6002



HARRINGTON PR-10
PUNCHED TAPE REGISTER
PROVIDES ACCURATE
FIRE ALARM RECORDS

This punched tape register automatically records fire alarms or other emergency signals as they are transmitted through central fire alarm stations, outlying fire stations, police department offices, water works, etc., circuits.

Write now for descriptive literature.

HARRINGTON
SIGNAL COMPANY
MOLINE . . . ILLINOIS

JANESVILLE QUALITY
TURN OUT CLOTHING

Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and

THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY

NOW AVAILABLE

We can now supply old type ¾ Length and Knee Length Felt-lined Firemen's Boots.

JANESVILLE APPAREL CO.
JANESVILLE, WIS.

rolls were thrown open to bona fide fire marshals, and cooperating or sustaining memberships were made available to manufacturers and other interests, having the progress of the fire service at heart.

Last year what was labelled its most successful convention, was held in magnificent New York City, with approximately 2,000 in attendance—the nation's largest fire department serving as host. In the following months another step was taken in the employment of a full-time general manager (the association had had two former permanent salaried executives, Chief Ralph Scott (ret) and Gifford Cook.) The new general manager is James E. Jagger. In May of this year the Association's headquarters were moved from their old place on W. 40th street to Midston House, Madison Ave. at 38th street.

The last twelve months have marked the passing of several staunch members—among them a long time director and one of the Association's most outstanding boosters—Chief Peter Steinkellner, of Milwaukee, who had retired shortly before his sudden death.

As this is written, the Association, with renewed vigor is mapping its plans and program for its Diamond Jubilee convention, scheduled for November 9th to 12th, inclusive in Miami, Florida. Chief Henry Chase, genial Chief of that city's alert fire department, will be host. Chief Chase has "arranged with a busy weather bureau to have all hurricanes, tornadoes and gales marked 'out of service' until after the convention."

Connecticut Firemen Meet

Captain Andrew J. Flanagan of the New Haven, Conn., Fire Department, was elected President of the Connecticut State Fremen's Association at its 65th annual convention, which took place August 20 and 21 in Norwalk High School Auditorium, Norwalk. Captain Flanagan succeeds Omer H. Bruneau of North Grosvenordale.

Captain Andrew J. Flanagan

Other officers named were Jesse C. Meeker of Danbury, Vice-President; John H. Moehring of Stamford, Secretary; Charles H. Brundage of New Haven, Treasurer, and the Rev. Michael J. Thompson, of Niantic, Chaplain.

The convention opened on Friday, August 20, with more than 800 delegates present. Following addresses of welcome by Mayor Irving Freese of Norwalk; U. S. Senator Brien McMahon of Norwalk; State Police Commissioner Edward J. Hickey of Hartford and Fire Chief Charles A. Volk, memorial services were conducted by the Rev. Michael . Thompson, State Chaplain of Niantic.

Photo Courtesy Frank Decerbo

Fire Chief Charles A. Volk of Norwalk, Conn., Host to the Connecticut State Firemen's Association Convention, Looks Over Convention Program with Norwalk's Mayor, Irving G. Freese (Right) as Both Take Part in Largest Firemen's Parade Ever Held in Norwalk.

Highlight of the convention, which was broadcast over Radio Station WNLK, Norwalk, was the unanimous approval by the delegates of a resolution presented by Captain Joseph J. Shanahan of the Bridgeport Fire Department, recommending a 56-hour work week for all paid firemen in Connecticut.

During the discussion it was pointed out that Hartford is the only city in Connecticut where firemen work the 56-hour week, and in some towns firemen work or are on duty as much as 96 hours in one week.

In talks before the delegates, Senator McMahon expressed his "faith and conviction that war might still be avoided," while Commissioner Hickey, who is State Fire Marshal and Chairman of the Civil Defense Commission, lauded the firemen for their vigilance and outstanding allegiance to duty during World War II and described the men as "soldiers of the home front."

George J. Richardson, Secretary-Treasurer of the International Association of Fire Fighters, Washington, D. C., guest speaker, commended the firemen on the service they were rendering to combat disaster and cited the many hazards faced by members of the fire service.

More than ninety-two marching units and forty-seven bands moved over an estimated four-mile line of march during the parade on Saturday, August 21, which concluded the three-day convention. Police Sergeant Albert W. Herman was Grand Marshal of the parade and Fire Commissioner Albert E. Heine was General Chairman.

THOMAS F. MAGNER

Montreal Has Million Dollar Freight Yard Fire

Characterized by veteran Montreal, Quebec, fire officials as the worst fire in over thirty-five years, a roaring conflagration on August 23rd swept a quarter of a mile through the vast Canadian National Railways Freight Yard from Chaboillez Square to the Mountain

street bridge in less than fifteen minutes. Railroad officials estimated the damage in excess of $1,000,000, including two long wooden sheds and contents and 130 freight cars most of them loaded.

The fire is said to have started at 3:47 P.M. through the explosion of an oxygen tank in Shed No. 1. It quickly spread to tank cars and thence to adjacent freight-handling structures. Three alarms were sounded in rapid succession bringing 250 firemen and apparatus from 25 fire stations. According to Assistant Director Anselme Filion, who was in charge of operations, it was "by far the largest crew ever called to a fire in the city."

Punctuated by frequent explosions, fed by gasoline and naphtha, one of which blew out windows as far away as the Queen's Hotel, the fire sent up Bikini-like clouds of dark smoke.

Seven firemen were injured, six being hospitalized in the long battle to confine the blaze. Temperature at the time of the fire was over 83 deg. F., but the fire's radiated heat raised temperatures in places to 110 deg. Telephone communications were interrupted by the fire, and the police had difficulty in controlling the 20,000 or more spectators, drawn from afar by the pillar of smoke, the broadcasts of the blaze and movement of responding fire forces.

It required 13 hours of work by firemen before the blaze was officially clocked as out. Over 8,000,000 gallons of water were used by the fire department in the struggle, between 50 and 60 hose streams being operated on the fire, or to cover exposures.

Indiana Firemen Meet

The Indiana Firemen's Association recently held its 31st annual convention at Anderson, Ind., at which time the following officers were elected: President, Clem A. Smith, Chief of the Lawrence Fire Department and former State Fire Marshal; First Vice-President, Chief Karl Bastian, Gas City; Second Vice-President, Harold Lohrig, Madison; Secretary, Dee Corbin, Bedford; Treasurer, Harry H. Fulmer, retired Fire Chief, Indianapolis; and Chaplain, Raymond Coon, Gary.

Lafayette, Ind., was selected as the convention city for 1949.

The registered attendance for the two days was over a thousand.

Convention Dates

Oct. 25-28—KANSAS STATE FIREMEN'S ASSOCIATION. Annual meeting, Wichita, Kans. President, Chief C. G. Lipps, Fire Headquarters, Wellington, Kans.

Oct. 25-27—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. Annual meeting, Lincoln, Neb. Secretary-Treasurer, Russell D. Salak, P. O. Box 312, Schuyler, Neb.

Oct. 28-29—NORTHEASTERN FIRE PROTECTION-PREVENTION CONFERENCE. Annual meeting, Hartford, Conn. Address correspondence to Hartford Fire Department, 275 Pearl Street, Hartford, Conn.

Oct. 31—Nov. 3—PACIFIC COAST INTERMOUNTAIN ASSOCIATION OF FIRE CHIEFS. Annual meeting, Sacramento, Cal. Secretary, Jay W. Stevens, Merchants Exchange Building, San Francisco, Cal.

Nov. 9—EGYPTIAN FIRE FIGHTERS ASSOCIATION. Quarterly meeting, Cairo, Ill. Secretary, V. L. Stocks, Carterville, Ill.

Nov. 9-12—INTERNATIONAL ASSOCIATION OF FIRE CHEFS. Annual meeting, Miami, Fla. Secretary-Treasurer, Chief Daniel B. Tierney, 8 Robbins Road, Arlington, Mass.

Champion Fire Apparatus

Champion Fire Pumps

NEW 100 PAGE CATALOG
Everything for Fire Depts.
Write Today For Your Copy

W. S. DARLEY & CO., CHICAGO 12

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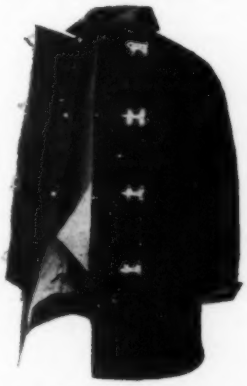
BUNKER SUITS
FOR COMFORT & PROTECTION



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SIREN BOOTS

We have been supplying FIREMEN'S CLOTHING for over 25 years.

Any fireman can have a catalog by writing—

BODY-GUARD
MANUFACTURING CO.
ST. JOSEPH - - MISSOURI

Operate
• LIGHTS
• TOOLS
• PUMPS
• BLOWERS

Ready for instant use, Onan Electric Plants provide dependable power for floodlights and tools anytime—anywhere. These lightweight plants are easily carried into trouble areas; compact enough to fit into small space for truck installations. Portable models available in capacities from 350 to 5,000 watts, powered by one and two-cylinder, 4-cycle air-cooled engines.

ONAN ELECTRIC PLANTS—A.C.—350 to 35,000 watts in standard voltages and frequencies; D.C.—600 to 15,000 watts, 115 and 230 volts Battery chargers—500 to 6,000 watts, 6, 12, 24, 32 and 115 volts.

Plant shown is Model 15 DL-14 1500 watts, 115-volt D.C.

Onan PRODUCTS
D. W. ONAN & SONS INC.
4538 Royalston Ave., Minneapolis 5, Minn.
ONAN ELECTRIC PLANTS

Classified Advertisements

"For Sale," "Proposal" and "Wanted" advertising $6 per inch insertion less 10% for three or more consecutive insertions.

FOR SALE—FIRE EQUIPMENT

UNUSED SURPLUS IN ORIGINAL CRATES
15# top brand CO_2 Extinguishers, perfect, sealed cartons, color Red, Squeeze Grip, complete $35.00
10# top brand CO_2 Extinguishers for System, less horn, hose & valve handle $9.25
100# top brand CO_2 Stationary Extinguisher Units, complete with 2 - 50# Cylinders, Wall Reel, Hose, Nozzle & Wall Brackets $155.00
Foam Play Pipe, PP25, complete with 2 gal. Hip Pack, Shoulder Straps & Pickup Tube—1½" & 2½", specify thread $18.50
Electric Lanterns, top brand..... $1.90
Linen Hose, pure white, 1½" x 25'—I.P. thread, brass couplings..... $5.00
Swinging Wall Reels for 2" or 2½" by 50' linen hose $2.95
Rubber Hose, 1½" x 50' I.P. th., brass couplings $10.00
Rubber Hose, 1½" x 5' I.P. th., brass couplings $1.75
Rubber Hose, twin ¾" x 25', meshed.. $5.00
Fog Nozzle triple action 2½" N.S. th.—10' Applicators $23.50
USED — LIKE NEW
Fog Nozzle 1½" with 4' Applicators.
Oxygen Rescue Breathing Apparatus, nationally known manufacturer.
CO_2 Systems Parts, top brands, Actuators, Switch Boxes, Drop Weights, Valves, Pipe & Fittings, Cables, 50# Cylinder Bonnet Heads, Cages, etc. CO_2 Wall Reels and Hose, made by leading manufacturers.
Attention: Shipyards and Marine Dealers
Unused and in Original Crates
Foam Pressure Proportioners, model PP D10 V, 20 gal. Units.
Foam Nozzles, flexible, model NPU, for above.
Foam Accumulators, Phomene # 402, for Pyrene Cartridge Charge.
Ventilating Hose, 8" x 15', collapsible, with connecting couplings.
Heat Thermal Units, 135 degrees.
Sealing Wax, 60# tubes.
Write for Full Particulars

ABSOLUTE FIRE PROTECTION COMPANY
1081 Arlington Ave., Plainfield, N. J.

FOR SALE — FIRE HOSE

You can't beat this value any place.

1½" DOUBLE JACKET, CRL, 50 ft. lengths. Top Brand. Fresh, Unused Surplus in good condition. Lightly storage soiled. Guaranteed high test and undamaged. Only 20c per foot or $10.00 per length including brass I.P.T. couplings. With N.S.T. or other couplings, $12.50.

ALSO

2½" S.J. Hose, 50' N.S. Perfect.....@ $25.00
2½" D.J. Hose, 50' N.S. Perfect.....@ $35.00
Full Coverage Asbestos Fire Suits.....@ $ 8.50
1½" Fog Nozzle & 6' Applicator.....@ $13.50
2½" Fog Nozzle & 12' Applicator.....@ $19.50
Siamese Y Valve, 2½" to Pr. 1½"...@ $ 9.00
Playpipe, Shut-Off, & Tip, 2½".....@ $18.00
1½" Foam Nozzle & Pick-Up Tube...@ $11.50
1½" Linen Hose, 50' I.P. Perfect....@ $10.00
1½" D.J. Couplings, Brass I.P.T.....@ $ 1.00

Many other items at 25% of list. Write us.
"DOLLARS THIN? — WRITE HALPRIN!"

HALPRIN SUPPLY CO.
837 East 4th Place, Los Angeles 13, Calif.

FIRE APPARATUS FOR SALE

Sealed bids will be received at office of Purchasing Agent, City of St. Paul, until 2 PM. Oct. 26th, 1948, for used Ward LaFrance 1948 Model 150 QD motor-driven quadruple combination pump, ladder hose, and 200 gal. Booster.

For bidding blanks contact:

JOHN J. McDEVITT
PURCHASING AGENT
253 Court House, St. Paul 2, Minn.

AMBULANCE

1940 Ford Seibert, good condition, new tires, blow-out proof tubes, equipped with cot.

HARRY HEIMAN, INC.
324 Lafayette Street
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Phone 4-1127

SPECIAL OFFERING

Government Surplus, Unused Navy Firemen's Boots

Safety Steel Cap Toes

Wool Lining

1 Inch Longer Than Storm King

1st Quality

Top Brand

Marked Size 7, Run As Large As 9

$5.95 Pair — $12 Value —

Add 35c for postage with Money Order in advance.

PHILIP SOLOMON & CO.
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FOR SALE

Palm Fiber Fire Broom. The Best "Fire Fighter" for Field Fires. Selected for its flexing and fire resisting qualities. Metal bound at head. Unexcelled for sweeping field fires. Made by the makers of the original fire broom. No. 62F Palm Fibre Fire Broom in lots of six or more, each $1.50. S. Ervin Diehl, Jr., 1239 N. Second Street, Philadelphia 22, Pa.

WANTED

Fire Equipment Dealers to sell Morning Pride protected rubber firecoats, fire pants, fire mitts and fire suspenders.

Write today Morning Pride Mfg. Co., 1946 Home Ave., Dayton 7, Ohio.

FIRE TRAILER FOR SALE

Fire Trailer with 150 G.P.M. Pump. Fully Equipped, Ready to Fight Fire, suitable for fire department auxiliary, estates, etc. Write for details to F. S. BRIGHAM, P.O. Box # 264, Roanoke, Virginia.

FOR SALE

1,000 gal. American-LaFrance pumper in excellent condition, reasonable. FRIENDSHIP ENGINE & HOSE CO., Merrick, N. Y.

AGENTS WANTED

Firemen with selling experience to sell a high grade line of fire protection equipment and fire department supplies in your vicinity. Full or part time. Commission basis. Give complete information in your letter concerning the experience you have had and references. Box 55, c/o FIRE ENGINEERING, 24 W. 40th St., New York 18, N. Y.

ATTENTION—FIRE DEPARTMENTS

Unused Rubberized Jackets, Gov't Surplus, Olive Drab Color, 100% Waterproof, 24 Inches Long. Sizes 42-44. Special $2.98. Worth Double.
Also, Fireman Turnout Coats, O.D. Color, Unused—Removable Wool Lining. $14.95. Plus Postage.
For circular, Write: M. WENTZ, 160 Bush Street, Bronx, N. Y.

FOR SALE
OXYGEN BREATHING APPARATUS

Unused Navy Surplus Sets, Chemical Type, Self-Generating. Top Brand. Complete with Mask, 7 Replaceable Canisters, Hook, and Repair Kit. Fresh and Perfect, $31.50.

HALPRIN SUPPLY CO.
837 East 4th Place, Los Angeles 13, Calif.

WAR SURPLUS IN STOCK

Trailer Mounted, and Front Mount Fire Pumps.
5" x 2½" Gates $6.90
Double Male $2.00
2½" Nozzles $2.00
2½" x 2½" x 2½" One Capped $2.50
Adjustable Hydrant Wrenches $2.00
Fog or Spray Tips $1.50
2½" x 2½" x 2½" Clapper Valves, all N.S.T. $3.50
Roof Ladders $20.00
Hose Straps $1.25
Spanner Wrenches ..... $ .25
1½" Fire Hose — and everything else needed in Fire Departments. Let me supply you. 40 years' experience.

FRANK SHORTNER
Edgar, Wisconsin

"FIRE-KILLER" DRY CHEMICALS

Distributors and Agents wanted for this popular $3 Fire Extinguisher complete with bracket. You can wholesale to stores or sell direct to householders and car owners. Demonstrating sample $2. Refilled free. FIRE KILLER MFG. CO., 107 North Franklin St., Syracuse 1, N. Y.

FOR SALE

Mack AB City Service Ladder Truck in good condition. Life net, 191 ft. of ladders, 40 gal. chemical tank CO-2 converted and standard equipment. Replacing with aerial truck. TOWNSHIP OF MORRIS, David Scott, Clerk, Morristown, New Jersey.

FOR SALE

American-LaFrance Type #14 City Service Hook and Ladder Truck. Six cylinder, 105 horsepower with 40 gallon chemical tank including chemical hose. 225 feet of ladders, one 53 feet long and another 35 feet. Truck in service since January 7, 1921. J. A. DOOLITTLE, CHIEF, FIRE DEPT., CITY OF CORNING, N .Y.

AMBULANCE FOR SALE

$810. 1934 Packard. Motor in perfect condition. Four new tires, two more almost new. Fully equipped and ready to operate. Write to Box 5, c/o FIRE ENGINEERING, 24 West 40th St., New York 18, N. Y.

FIRE EXTINGUISHERS

3 - 40 Gal. foam extinguishers on steel wheels with 50' hose and nozzle in 1st class condition. Leading brand. $175 each.
1 - 40 Gal. foam, New in Crate, with steel wheels and 50' hose and nozzle. Top brand. $200.

CARL RICHTER
716 Seiler Ave., Savannah, Georgia

WANTED

Dealer—Distributors to sell fire apparatus manufactured by well-known Mid-West Factory. Prompt delivery. Attractive proposition. Address Box 30, FIRE ENGINEERING, 24 West 40th St., New York, 18, N. Y.

ATTENTION — ALL FIRE DEPARTMENTS

At long last here is the answer to your worn and torn fire boot top problem. Your worn and torn Fire Boots ordinarily ready for discard due to worn out TOPS, can now be repaired as good as new. Our approved "Factory Method" will save you money. The cost is only $4.00 per pair for complete new TOPS. Approved and endorsed by many departments. Upon request will furnish names of satisfied users.

GODFREY & HARRIS
32 Frankfort Street
New York 7, N. Y.

Nationally Advertised

FIRE EXTINGUISHERS

(WAR SURPLUS)

Reduced for Immediate

CLEARANCE

FIRE EXTINGUISHER

C. O. 2 Squeeze Grip

Nationally known manufacturers. SIZE: 15 lbs. Color, RED. Fully charged. Complete with hose and horn. Packed in individual cartons. Navy approved. Approved by L. A. Board of Fire Comm. CONDITION: UNUSED.

$32.50

F.O.B. Los Angeles

FIRE EXTINGUISHER

Nationally known manufacturers. Model A-16. Color, O. D. Fully charged. Complete with hose and horn. UNDERWRITERS' LABEL. Packed various. CONDITION: UNUSED.

$27.50

F.O.B. Los Angeles

TERMS: NET CASH

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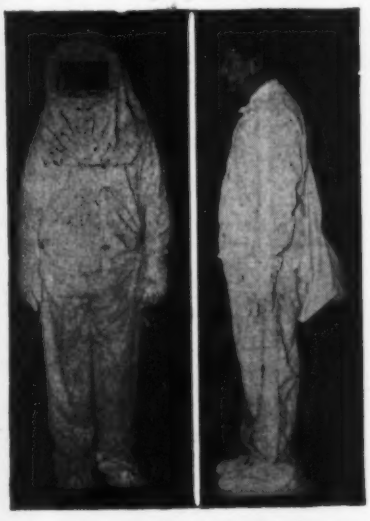
Wholesale Distributors

1505 E. 1st St. - Los Angeles 33, Calif.



ASBESTOS FIRE SUITS

Complete with Safety Helmet

A definite necessity in every modern Fire Department. One piece—adjustable to almost any size. Specially treated for oil and gas fires!

Unused—U. S. Navy—Spec. No. N-37-S-10.

Your Department isn't complete without these suits.

Price $16.81 per suit

or 4 for $15.81 each

F.O.B. Newark

LITTLE TRADING CORP.

153 No. 12th Street, Newark, N. J.

Book Shelf

FOREST FIRE PROTECTION—by Ralph C. Hawley and Paul W. Stickel. Second Edition; 356 pages; John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y., publishers; Price $4.50.

"Forest Protection" is an unusually complete book covering all phases of forest protection. It treats such sources of forest injury as fire, on which the greatest emphasis is placed, insects and diseases. The authors also discuss regulation of harmful plants, domestic grazing animals, wildlife and atmospheric agencies. Stressing the principles underlying forest protection rather than giving detailed instructions for carrying on specific types of work, the authors concentrate on eliminating an injurious agency before it can do any harm and on developing a forest that is inherently capable, so far as possible, of preventing damaging action from starting.

Ralph C. Hawley, a Yale University School of Forestry faculty member for over forty years, is currently Morris K. Jesup, Professor of Silviculture. The author of another popular book, "The Practice of Silviculture," he has also had considerable practical experience as a forester. Co-author Paul W. Stickel, after twenty years of forest fire research with the Northeastern and Northern Rocky Mountain Forest Experiment Station, U. S. Forest Service, joined the faculty of the University of Massachusetts, where he is now Assistant Professor of Forestry, in 1945.

Chief John Hand Dies

John Hand, who retired in May, 1947, after having served fifty-five years as a member of the Kansas City, Mo., Fire Department, died on August 26. He was 76 years old.

He became an assistant fire chief in 1940. Five years later he took a voluntary reduction in rank to a captaincy and went to the fire station at the Municipal Air Terminal.

In December, 1946, he suffered a hip injury which caused him to be placed on the "injured in the line of duty" roll. He remained on that status a year after he retired from active duty. A few days before he died, Chief Hand fell down a flight of stairs at his home and shattered completely his fractured hip. He died as a result of shock and his age.

Chief Hand exhibited in this and other countries the famous Kansas City Fire Department team of Dan and Joe. The two horses were specially trained and frequently under Chief Hand's guidance, amazed crowds with their performances.

Film Fans Unmoved by Fire

In Atlanta, Ga., a crowd of 500, most of them children, were so engrossed in a wild and wolley movie, Oct. 2nd, that police had to force them from a burning theatre.

Two officers discovered the fire, believed to have started from an exhaust fan, and hurried into the building to direct evacuation. The audience was concentrating so hard on the "ride 'em cowboy" film that they ignored the policemen's injunction to leave the premises immediately. Damage was estimated at $2,000.

WAR SURPLUS BARGAINS

UNUSED . . . FIRE EXTINGUISHERS

2½-Gal. STEEL FOAM

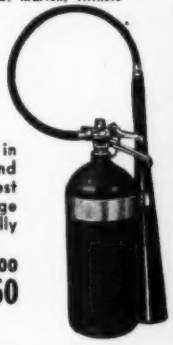
Ideal type for fighting fire in all ordinarily combustible materials. Each unit produces approximately 20 gallons of fire-killing foam.

Present List approx. **$35.00**

OUR PRICE..... **$12.00** Complete

F.O.B. Marion, Illinois

"TEN POUNDER" CO_2



Here's the best-seller in the CO_2 line—a ten-pound capacity unit of the latest type. Quick discharge squeeze grip handle. Fully charged, ready to use.

Present List approx. **$48.00**

OUR PRICE..... **$36.50**

F.O.B. Chicago, Ill. Plus Illinois Sales Tax

ACME EQUIPMENT CO., INC.

Write for our FREE illustrated Circular of WAR SURPLUS BARGAINS.

126 S. Clinton Street

Room 208 Chicago 6, Ill.

Chief---

COULD YOU PUT OUT A CHIMNEY FIRE FOR 55¢?

YOU CAN WITH IMP

CHIMNEY FIRE EXTINGUISHER

Save rushing to chimney fires over icy pavements . . . avoid slippery ladders and roofs by using IMP Chimney Fire Extinguisher. Just throw a 55c package "as is" on the hottest part of the fire in the stove, furnace or fireplace. The chimney fire will be out in jig-time without water or chemical damage. Recommended by fire chiefs, who always carry IMP in their cars for emergencies. Many volunteers carry it in their personal cars.

USE THIS COUPON FOR YOUR ORDER

F. C. FOARD & CO., Bridgeport, Conn.

Please send me ..... dozen packages of IMP. I will honor your bill f.o.b. Bridgeport.

NAME .....

ADDRESS .....

CITY .....

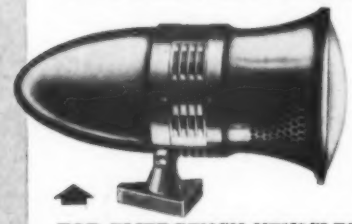
STATE .....

FIRE EQUIPMENT DISTRIBUTORS ATTENTION

Add "IMP" Chimney Fire Extinguisher to your line. Write today for special distributor plan.

STERLING SIRENS

NOT BY CHANCE . . . The Choice of Leading Fire and Police Departments, Hospitals, Manufacturers and Others



STERLING has led the field in new designs and improvements for over 40 years. First to introduce precision manufacturing of siren alarms, Sterling is now the world's largest manufacturer of siren equipment.

FOR EMERGENCY VEHICLES
Model 20 SIRENLITE—a powerful siren combined with an automatically flashing red light.

FOR STATIONARY USE
Model M—quick accelerating, powerful, heavy duty public fire alarm. Fully weatherproof, made from the highest grade material.

Complete Line of Siren Equipment Available. Bulletin on Request.

THE STERLING SIREN FIRE ALARM CO., INC.
58 Allen St., Rochester 6, N. Y.

TURN YOUR SPARE TIME INTO PROFITS
$84.00 A WEEK FROM 2 SALES A DAY

Sell RANDOLPH Fire Extinguishers

Every building holds a prospect — Homes, Boats, Cars, Garages, Gas Stations, Shops, Laundries, Farms, Hotels, Stores, Factories.

THEY WANT A RANDOLPH with its panic-proof trigger action that smothers the fire instantly in a snowy blanket of carbon dioxide. No mess, no water, no damage, even to food. It evaporates without a trace.

YOU CAN QUALIFY for exclusive territory to sell the famous, nationally advertised Randolph used by leading industrial concerns everywhere.

Approved by Underwriters' Laboratories

Quick profits await those who act at once. Four sales a day net $168.00 a week. Write today for full or part-time plan, territories, demonstration kit, etc. Don't delay.

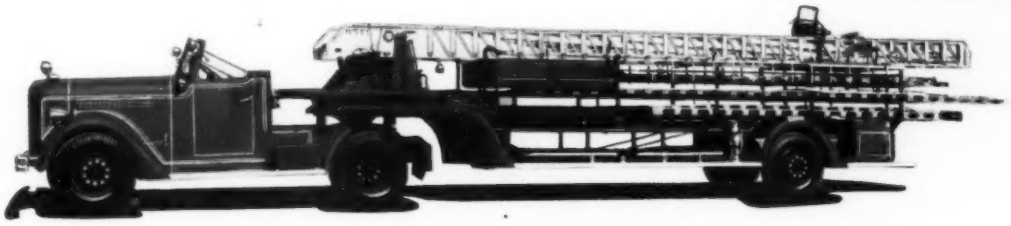
RANDOLPH LABORATORIES, Inc.
19 EAST KINZIE STREET **CHICAGO 11, ILLINOIS**

ADVERTISING INDEX
OCTOBER, 1948

Acme Equipment Co., Inc.	757
Acme Protection Equipment Co.	748
Akron Brass Mfg. Co., Inc.	747
Aladdin Proportioning Equip. Co., Inc.	742
All-Out Mfg. Corp.	718
Alrose Chemical Co.	734
Aluminum Ladder Co.	643
American-LaFrance-Foamite Corp.	644-645
American-Marsh Pumps, Inc.	630
Ansul Chemical Co., Fire Ext. Div.	733
Atlas Safety Equipment Co., Inc.	663
Audio Equipment Corp.	750
Bar-Way Mfg. Co.	741
Beacon Falls Rubber Footwear	642
Bean Mfg. Co., John	656
Bi-Lateral Fire Hose Co.	666-667
Bishinger-Koehler Mfg. Co.	752
Blackington & Co., Inc., V. H.	654
Body Guard Mfg. Co.	755
Boston Woven Hose & Rubber Co.	649
Boyer Fire Apparatus Co.	721
Braxmar Co., C. G.	739
Buckeye Iron & Brass Works	724
Capital Fire Equipment Co., The	729
Carbide & Carbon Chemicals Corp.	723
Carpenter Manufacturing Co.	746
Central Fire Truck Corp.	749
Circul-Air Corp.	748
Darley & Co., W. S.	755
Davy Automatic Fire Escape Co.	738
Dayton Fire Equipment Co.	750
DeBoer & Associates, H. O.	721
Duo Safety Ladder Corp.	651
E and J Manufacturing Co.	725
Elkart Brass Mfg. Co., Inc.	719
Emergency Aids Co.	745
Emerson Co., J. H.	Inside Front Cover
Eureka Fire Hose Div., U. S. Rubber Co.	720
Excelsior Brass Mfg. Co.	732
Fabric Fire Hose Co.	638
Fairbanks, Morse & Co.	752
Federal Enterprises, Inc., Signal Div.	627
Foard & Co., F. C.	757
Four Wheel Drive Auto Co.	Back Cover
Fyr-Fyter Co.	669
Fyr-Fyter Products	750
Gamewell Co.	672
General Electric Co.	751
General Fire Truck Co.	664
Goodall Rubber Co.	736
Goodrich Co., B. F.	631
Gorman-Rupp Co.	745
H. O. R. Co., Inc.	744
Hahn Motors, Inc.	632-633
Hale Fire Pump Co.	659
Halligan Tool Co.	751
Halprin Supply Co.	727
Hardie Mfg. Co.	747
Harrington Signal Co.	754
Hedberg, J. N.	728
Hewitt Rubber Division, Hewitt-Robbins, Inc.	752
Homelite Corp.	650
Howe Fire Apparatus Co.	743
Janesville Apparel Co.	754
Kellam Mfg. Co.	749
Kim Hotstart Mfg. Co.	730
Koehler Mfg. Co., Inc.	722
Leece-Neville Co.	652
Leidy Electric Co.	735
Little Trading Corp.	757
McDermott Corp., J. A.	753
McIntire Brass Works, F. N.	648
Mack Mfg. Corp.	660-661
Mars Signal Light Co.	646
Marsh Municipal Equipment Co., Clem	752
Maxim Motor Co.	640-641
Midwestern Mfg. Co.	670
Mine Safety Appliances Co.	653
Morning Pride Mfg. Co.	748
Motorola, Inc.	639
National Foam System, Inc.	629
Oberdorfer Foundries, Inc.	647
Onan & Sons, D. W.	755
Oren Roanok Corp.	668
Owens-Corning Fiberglass Corp.	634
Philco Corp., Industrial Div.	717
Pirsch & Sons Co., Peter	Inside Back Cover
Powhatan Brass & Iron Works	665
Quaker Rubber Corp.	635
R. M. B. Corp.	757
Randolph Laboratories, Inc.	758
Republic Rubber Div., Lee Rubber & Tire Corp.	658
Rockwood Sprinkler Co.	671
Russell Uniform Co.	750
Scharff, Inc., J. H.	753
Scott Aviation Corp.	743
Seagrave Corp., The	636-637
Smith & Co., D. B.	657
Spangler Engrg. & Sales Co., D. H.	632-633
Stephenson Corp.	740
Sterling Siren Fire Alarm Co., Inc.	758
Textileather Corp.	662
Ward LaFrance Truck Corp.	655
Waterous Company	731
Wentworth-Forman Co., Inc.	748
Wooster Brass Co., The	737

F.D.N.Y.

This Pirsch 85′ tractor trailer aerial ladder truck represents the first metal ladder all-powered aerial selected by the City of New York. The hoist is the Pirsch Hydro-Mechanical type and the ladder is of the Pirsch lattice girder design and built of aluminum alloy.



The Fire Engine That Experience Produced

In acceptance tests the ladder was required to withstand a 500 lb. weight suspended from the fly ladder at 45° angle (upper right view). In the water tower test the ladder withstood 250 lbs. pump pressure with 1¼" nozzle through 100 ft. of 2½" hose with ladder at 60° angle (lower left view).

PETER PIRSCH & SONS CO. KENOSHA, WIS.

"BUILDERS OF AMERICA'S FIRST ALL-POWERED AERIAL LADDER TRUCK AND AMERICA'S FIRST 100′ AERIAL LADDER"

FIRES
don't wait for
GOOD ROADS

When fire strikes . . . strike back fast with the extra power . . . added traction . . . . greater speed . . . . FWD's four driving wheels give you

To save lives and property, you must get to the fire — and get there fast — no matter how bad the roads. FWD fire engines — with all wheels driving, all wheels gripping the road — give you the plus performance to meet any emergency from fire-station to fire. *Write for complete facts on great new FWD fire-fighting equipment — triple combination pumpers in 500, 750, and 1000 g.p.m. capacities, and the F-50-R designed expressly for rural fire-fighting.*

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONT.

WITH FRONT WHEELS PULLING AN
BACK WHEELS PUSHING — FWDs D
THROUGH SNOW-BLOCKED STRE

POWER ON ALL FOUR WHEELS
TAKES YOU THROUGH TO
OFF-THE-ROAD LOCATIONS

A FOUR-WHEEL GRIP ON THE ROAD
PULLS YOU UP STEEP, SLIPPERY
GRADES WITHOUT LOSING SPEED

FWDs GET THROUGH TO
OUT-OF-THE-WAY HYDRANTS
IN HARD-TO-REACH SECTIONS

Model F-75-T, 750 g.p.m. ca
pacity triple-combination FWD
fire fighter — equipped wit
FWD safety cab.

FWD

YOU'RE SURE TO GET THERE WITH AN FWD